ALSO IN OUR NEWS SECTION
- Converting used HP 9000s into e3000s may help keep MPE alive. PAGE 12
- Business process outsourcing cuts costs, but there's a price to pay. PAGE 14

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# MONEY MATTERS

SPECIAL REPORT
**IT SPENDING**

During the boom years of IT spending, both **Cisco** in networking and **EMC** in storage were able to charge premium prices for their hardware. Cisco still can, users and analysts say. But EMC has had to change its ways. Reporters Matt Hamblen and Lucas Mearian asked IT managers why they're willing to pay more for Cisco's routers and switches but no longer want to do the same for EMC's disk arrays. **OUR REPORT BEGINS ON PAGE 6.**

TUCCI

MAZZOLA

**ALSO INSIDE:** In Q&As, EMC and Cisco executives address pricing issues. **PAGE 8**

## Internet Technology Flaws Raise Fears of DoS Attacks

Holes found in core Transmission Control Protocol, Cisco's IOS

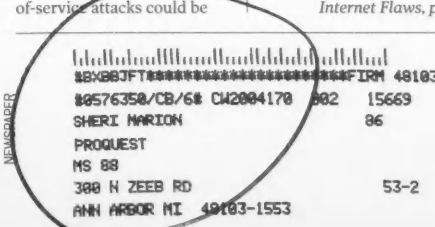
BY JAIKUMAR VIJAYAN

The disclosure last week of two serious flaws in widely used Internet technologies raised concerns among some security experts that denial-of-service attacks could be launched against core routers and switches.

But there's little reason for alarm, others maintained.

One of the vulnerabilities involves Cisco Systems Inc.'s implementation of the Simple Network Management Protocol in its Internetworking Operating System. The flaw could allow remote attackers

*Internet Flaws, page 45*




# CA's Gains Will Survive CEO's Ouster, Users Say

They're optimistic that progress in customer relations begun under Kumar will continue

BY STACY COWLEY AND DON TENNANT

Computer Associates International Inc.'s management shake-up is unlikely to directly affect customers or dramatically change the company's product plans and strategy, users and analysts said last week in the wake of Sanjay Kumar's ouster as chairman and CEO.

Still, the company is under the watchful eye of its customers. Sherry Irwin, chairman of the Canadian Software Asset Management Users' Group in Toronto, expressed concern that Kumar's departure from the helm could jeopardize the improvements he made in customer relations after he became CEO in 2000. Users should be wary of any changes CA may try to make as a result of the shake-up, she said.

According to Mark Barrenechea, CA's senior vice president of product development, Kumar will remain at the forefront of building customer satisfaction in the newly created position of chief software architect. Asked why users shouldn't be concerned that CA might slide back into its old ways with Kumar out of the CEO's office, Barrenechea stressed that Kumar's presence will continue to be felt.

"Sanjay is a brilliant, innovative, motivating individual," Barrenechea said. "It's very much the Microsoft model of freeing up our best talent to focus on adding value back to customers." Addressing the current mood at CA, Barrenechea said he's inclined to emphasize the positive. "If I can get Sanjay's time every day to help me build product, it's a good day," he said.

*CA's Future, page 15*

**INSIDE**

**CA, IBM execs trade barbs. PAGE 15**

**It's a case of the sins of CA's father, says Maryfran Johnson. PAGE 16**

## McNealy Lays Out a Plan for Profits at Sun

Tells partners changes are in store — but not for basic technologies

BY PATRICK THIBODEAU
SAN DIEGO

If you're a Sun Microsystems user, expect some changes. Your servers may come free as part of a software and services package. Subscription pricing plans, including one for Solaris, will expand. And there will be a growing emphasis on utility pricing models.

At least that's the vision Sun CEO Scott McNealy described at the iForce partner conference here last week. Despite

*Sun's Plan, page 45*

**REALITY CHECK**

**ONLINE:** No timetable set for Sun-Microsoft interoperability.
QuickLink 46418
www.computerworld.com

## A Sunny Forecast For Open-Source

STAN HARVEY

CIO Dan Agronow, with Jeff Cunningham and Tim Bolser

Weather.com's dramatic shift away from proprietary software and hardware has cut IT costs by one-third. **PAGE 19**

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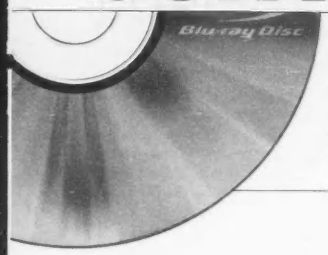


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- **Cisco's dominance of the networking market allows it to charge higher prices, but it's a fair trade-off, users say.**
- **Q&A: Execs from EMC and Cisco talk about their companies' pricing policies.**

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# EMC Lowers Prices, Reins In Sales Force

## Stiffer competition forces vendor to change its approach

BY LUCAS MEARIAN

SPECIAL REPORT
IT SPENDING

TALK TO ANY number of EMC Corp. customers and they will relate stories of a time not so long ago when the storage vendor's salespeople would walk into their office, write a price for a disk array or software package on a piece of paper and say, "Take it or leave it."

But those days are gone, said most of the 10 EMC users interviewed by *Computerworld* this month.

EMC's once arrogant and unbending sales force is quickly changing into one that will bargain with customers and even undercut major competitors such as IBM, Hewlett-Packard Co. and Hitachi Data Systems Corp., the users said.

"Today, if you get a better deal with IBM, HP or Hitachi, EMC will come back and say, 'Give us another shot,' " said Lev Gonick, CIO at Case Western Reserve University in Cleveland. The school recently added 5TB to its installation of EMC's Clariion midrange disk arrays, giving it a total storage capacity of 35TB.

Darko Dejanovic, chief technology officer at Chicago-based Tribune Co. and its Tribune Publishing Co. subsidiary, said that when he first met with EMC early last year to negotiate a purchase of several Clariion arrays, the storage vendor's salespeople were extremely unpleasant to deal with. But EMC went to great lengths on pricing to win the order from Tribune, which wasn't an existing customer.

"Hitachi squeezed them really bad," Dejanovic said. "We almost went with Hitachi storage. The reason we went with EMC is that they gave us some good discounts on their boxes. We were kind of virgin territory for them."

Dejanovic added that by the time he met with EMC again in December to buy three more Clariion arrays, its salespeople had progressed in attitude from a "zero" to a 70 out of 100 on his satisfaction scale.

With storage hardware becoming more of a commodity and EMC no longer the clear leader in the disk array market from either a technology or sales standpoint, CEO Joe Tucci acknowledged that his company had no alternative but to become more competitive on pricing. Tucci also said he has "trimmed some of the extreme edges" off of EMC's sales force by firing workers who didn't get the message that they were expected to be less haughty with users (see interview, page 8).

### STORAGE PRICES

**Forecast average per-gigabyte selling prices for disk arrays during the first half of 2004**

| MIDRANGE MODELS | |
|---|---|
| IBM FAStT900 | $11.70 |
| EMC CX600 | $13.30 |
| HP EVA 5000 | $13.60 |
| Hitachi 9500 | $16.80 |
| **HIGH-END MODELS** | |
| IBM ESS 800T | $28.50 |
| Hitachi 9980V | $31.60 |
| HP xp1024 | $38.90 |
| EMC DMX3000 | $39.10 |

Note: All prices are for arrays that use 146GB disk drives and have total capacity of 4TB to 8TB.

SOURCE: GARTNER INC., STAMFORD, CONN.

# Cisco's Prices Seen As a Fair Trade-off

## Network managers shrug off premiums

BY MATT HAMBLEN

TWENTY YEARS AFTER it was founded, Cisco Systems Inc. so overwhelmingly dominates the networking equipment market that many network managers say they don't balk about the need to pay premium prices for most of its products.

The upfront cost of Cisco's switches and routers is often higher than the price of rival devices, according to interviews with 15 Cisco users. Some of the users said the pricing premium charged by Cisco can total 15% or more, and analysts cited even larger cost differences. But most of the users put Cisco in the legendary category of 1970s IBM — a safe choice that won't get anyone in IT fired.

Cisco also got high marks for the reliability of its products and the strength of its customer service. As a result of the widespread perception that Cisco is more expensive, the users said they do try to keep an eye out for price discounts and innovative technology from Cisco's competitors. Still, they added that they often end up sticking with Cisco anyway.

For example, Cardinal Glass Industries Inc. in Eden Prairie, Minn., has purchased mostly Cisco networking products for the past four years. Brian Moss, a senior systems engineer at the glass maker, estimated that it pays a 15% premium on average for the devices, compared with those from vendors such as Hewlett-Packard Co. and 3Com Corp. But the extra costs have been money well spent, he said.

"We've tried other vendors and just weren't happy with support," Moss said. In contrast, he added, Cisco's support workers "answer our calls, they know the answers to our questions, and it's a good OS and a familiar product."

"A Cisco network is a rock-solid network, and if we weren't able to build [ours] with Cisco hardware, I don't think I'd feel all that comfortable," said David Roessler, director of information services at Quay Corp., a company in Eatontown, N.J., that makes printed circuit boards for electronics manufacturers.

Other vendors might offer technology that's similar to what Cisco sells, Roessler said. But he added that he doubts they would be able to match its technical support prowess, such as its ability to provide software patches and fixes quickly and reliably.

Cisco accounted for nearly two-thirds of the $22.3 billion worth of switches and routers sold globally last year, according to Framingham, Mass.-based IDC. Its share of those two markets was virtually unchanged from 2002, the research company said.

IDC tracks at least 20 vendors in the switching market, and Gartner Inc. analyst Mark Fabbi said there are plenty of viable alternatives to Cisco. Fabbi urged users to avoid upgrades of Cisco installations without bothering to seek bids

**63%**
Cisco's share of the switch market in 2003

**62%**
Its share of the router market

SOURCE: IDC, FRAMINGHAM, MASS.

**CREDITS**
- **Writers:** Matt Hamblen, Lucas Mearian
- **Designer:** Julie Quinn
- **Editor:** Craig Stedman

However, some users and analysts said EMC's acts of pricing contrition sometimes are less than meets the eye. EMC now uses lower hardware prices to win new customers or buy its way back into accounts, then tries to make the discounts back on software and services, said Gary Pilafas, a senior storage and systems architect at UAL Loyalty Services Inc., an Arlington Heights, Ill.-based unit of United Air Lines Inc.

"It's still theirs to do," Pilafas said, referring to the fee-based services that EMC offers for tasks such as configuring its Symmetrix Remote Data Facility software and other storage management applications instead of training users to do the work themselves.

On average, EMC still isn't the lowest-cost disk array vendor, said Gartner Inc. analyst Stanley Zaffos (see pricing chart, page 6). He also noted that EMC has convinced users to pay more per gigabyte for the high-end Symmetrix DMX arrays it introduced last year than it was getting for older models — a pricing uptick that rival vendors have emulated.

**26%**
EMC's disk storage market share in 2000. Ranking: No. 1.

**19%**
Its market share last year. Ranking: No. 2, behind HP.

SOURCE: IDC, FRAMINGHAM, MASS.

## Falling Hardware Sales

But Nick Allen, another Gartner analyst, said EMC has become increasingly competitive on the hardware side over the past 18 months.

The company's hardware sales and market share have fallen along with its prices, according to Framingham, Mass.-based IDC. EMC sold $2.5 billion worth of disk storage systems last year, less than half of the $5.6 billion level it reached in 2000, IDC said, adding that it dropped behind HP in sales during 2003.

> We almost went with Hitachi storage. The reason we went with EMC is that they gave us some good discounts on their boxes.

**DARKO DEJANOVIC,** CHIEF TECHNOLOGY OFFICER, TRIBUNE CO. AND TRIBUNE PUBLISHING

But thanks to its recent acquisitions of three major software vendors, EMC can now turn to an expanded software business and growing services revenue to supplement the hardware side. Earlier this month, EMC reported first-quarter revenue of $1.87 billion, up 35% from $1.38 billion a year earlier. Hardware accounted for just 48% of total revenue, EMC said. Software and services contributed 26% and 25%, respectively.

Mark Detert, director of data center and automation operations at Visa U.S.A. Inc.'s debit-processing services unit in Englewood, Colo., said EMC is finally in the game of selling full solutions combining hardware, software and services instead of just "trying to push the Symmetrix like they have for the past 10 years."

Allen said users normally must wield a big club in order to soften up EMC's salespeople on services costs. "They'll give in on hardware and software but not give in on all three unless they're really hungry," he said.

That means an IT manager has to make a large purchase, work at a company that has strategic value to EMC or be good at negotiating to get the best possible deal. For example, it helps to be serious about turning to another vendor if EMC won't come down enough on price, Zaffos said. "If the [EMC] account team recognizes that you want them and that it's not really an honest competition, that will impact the bid price," he added.

Even so, EMC has changed for the better, said David Kadow, director of systems administration and infrastructure at CDC IXIS Capital Markets North America Inc. in New York. Kadow, who has been an EMC user for five years, said the increased competition has transformed its sales staff from pugnacious to polite.

"They've stepped up in the past two or three years and made many changes," Kadow said. "At this point, I feel like we have a partnership with them." **46375**

### SOFTWARE TO THE RESCUE?

Integrated life-cycle management has become EMC's new mantra – and its biggest technology challenge:

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from competing vendors. Nonetheless, he referred to the switching market as "Cisco and the seven dwarves."

Fabbi said Gartner's analysis of switch revenue and port-shipment data shows that Cisco's average selling prices were more than 50% higher per port than those of key rivals during the second half of 2002 and all of last year.

And the pricing gap has been widening, despite reductions in Cisco's prices, Fabbi said. Cisco believes it "can get away with charging more for the majority of cases because most enterprises will buy Cisco products by default," Fabbi and fellow analyst Bob Hafner wrote in a presentation prepared for Gartner's spring Symposium/ITxpo 2004 conference last month.

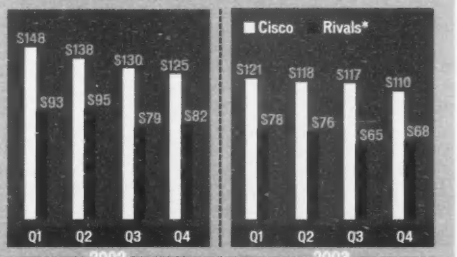
Many users buy Cisco products no questions asked when they could get the company to lower its prices just by opening up an equipment purchase to competitive bidding, said Zeus Kerravala, an analyst at The Yankee Group in Boston. "It's shocking how few Cisco customers bid out to other vendors," he said.

SouthTrust Bank in Birmingham, Ala., spends more than $2 million a year with Cisco. But Stanley Adams, the bank's group vice president of network services, said he asks other vendors to bid against Cisco, resulting in more competitive pricing from Cisco.

The perception that Cisco is more expensive "is probably true," at least in upfront costs, Adams said. But, he added, "we are not really willing to pay a premium." Adams wouldn't disclose specific information about Cisco's pricing for SouthTrust.

### SWITCH COSTS

**Average selling prices for Ethernet switches, per port**




SOURCE: GARTNER INC., STAMFORD, CONN.

Based on revenue and port-shipment data announced publicly or provided to Gartner
* Includes Alcatel, Extreme Networks, Foundry Networks and HP

GMAC Commercial Mortgage Corp. in Horsham, Pa., built its 1-year-old IP telephony system around gear from Nortel Networks Ltd. after Nortel underbid Cisco. But Cisco remains the company's data networking provider, a position it has held for the past six years, said Stephen Benson, vice president of global corporate technology strategy. "On large technology upgrades, we take bids from vendors other than Cisco, such as Nortel for voice," he said. "But we already have an investment in training and people knowledgeable about Cisco. And everybody knows that eight out of 10 network engineers are Cisco heads because Cisco has such a prevalent market share."

Cisco executives sought to dispel the notion that its products are automatically higher priced, claiming that it beats competitors in several areas. For example, Cisco's Catalyst 6500 switch is less expensive than similar 10 Gigabit Ethernet products from several rivals, said Mario Mazzola, Cisco's chief development officer (see interview, page 8).

Like many other users, Jeff Jacobs, a senior network design engineer at HealthNet Inc. in Sacramento, said higher prices are a fair trade-off for Cisco's full range of services and its responsiveness to customers. He also noted that Cisco is a safe, stable choice compared with many of its networking rivals.

"Cisco is a financially sound company — and I'm stating the obvious there, right? — so there is a certain peace of mind that comes from purchasing their products," Jacobs said. "There is no realistic danger of Cisco not being around to support their products." **46376**

### TCO CONSIDERATIONS

Users say purchase price is just one part of the total cost of ownership equation, and they give Cisco an edge in overall value:

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# IT Cost Calculations

## Cisco's R&D chief Mario Mazzola defends the company's pricing; EMC CEO Joe Tucci says the storage vendor needs to be 'very competitive' on bids

BY LUCAS MEARIAN

**Do you miss the days when EMC could charge premium prices for disk arrays, and do you see a time when that will come back? TUCCI:** Unfortunately, on my shift, we never had a lot of those times. I never really got a lot of that enjoyment. It's a great position to be in, though. Do I see those times coming back? I really don't. I think it's going to stay a really competitive market. Customers today are incredibly cost-conscious. We have to give the best value proposition to customers at a very competitive price. If we do that better than anybody else, which at the moment I think we're doing . . . [we're] going to grow and prosper.

> I think it's going to stay a really competitive market. Customers today are incredibly cost-conscious.
> **JOE TUCCI**

**Do you think you may be able to raise hardware prices again, say, when IT spending recovers?** It's certainly not an option I'm banking on or considering. We will continue to bring down pricing.

**EMC's sales force has had a reputation for being haughty and arrogant. What did you do to change that?** I do not hear that anymore. I think customer after customer has said we have made just massive progress on that front. How did we change it? It's basically a reward and punishment system. If you [do] it, you're going to be fired. If you behave the way you like to be treated personally, those are the kind of salespeople who will be rewarded with the better jobs and promotions.

Certainly, we had some reputation in that area, which we didn't like, but the vast majority of our sales force was fine. We had a few kind of fringe [elements]. A lot of those people have been replaced.

**So one of the steps you took was getting rid of the haughty salespeople?** Absolutely. There were a lot of pink slips handed out to people I thought were not going to change.

**EMC has always been seen as among the most proprietary of hardware and software vendors out there.** I don't know about the past, but I don't see ourselves like that at all. In everything we're doing now in the open-software groups, whether it be our own open-software division, which EMC formed a year and a half ago, or whether it be in Documentum, Legato or VMware, these are absolutely as open as any products on the market.

On the hardware side, all hardware fundamentally works differently. So there's no way EMC is more proprietary than Hitachi or [IBM], HP or anybody else that's out there. As a matter of fact, we are the first vendor to have all our major systems to be SMI-S compliant.

Some reputations you deserve. If we have that reputation out there . . . there's no basis in fact.

**What's your view of shared APIs and standards like SMI-S? Are they a good thing, or a necessary evil that you need to support?** [The Storage Networking Industry Association] put out a list of 80 products that passed the SMI-S compliance test. Fifty percent of those were EMC products. That just reinforces the level of investment that EMC is making to drive these standards forward and to make sure customer adoption is as quick as possible.

**Are you having difficulty knitting together all the software you've acquired?** It's a matter of degree. Software in some cases and hardware in some cases is loosely knit together today, and in some cases it's tightly knit. It's a journey, and we do a pretty good job laying it out for customers: Here's what we have today, and here's our road map. **46358**

Q&A

BY MATT HAMBLEN

**Is the reputation that Cisco products are higher priced than rival ones fair? And why do you think you have so many customers, if that's the case? MAZZOLA:** Our approach, which has been crucial for the success of Cisco, is to look at all the different requirements that make sense for customers. So we do consider excellence in technology innovation as a necessary condition, and also the service part of the sales engagement and the relationship with customers as equally important.

Our products are based on a lot of reaction from customers. We consider what are the real problems and challenges they face. In terms of the cost or price of our products, obviously what is really relevant for our customers is, what is the total cost of ownership? That includes the opportunities to deploy in a timely fashion and with [the ability] to overlay new services [on existing hardware].

> In terms of the cost or price of our products, obviously what is really relevant for our customers is, what is the total cost of ownership?
> **MARIO MAZZOLA**

**But what about pricing of products?** We make a point in terms of our strategic process for development to look simultaneously at three major points. And actually, the very first in importance is the price and performance. We don't want to shy away from producing the best price/performance type of product.

The second point is to have more flexibility and more intelligence and more adaptability in our networks. The third one is to have global architectures which are long-standing. We try to create architectures which have a long life and do not require any type of forklift upgrade.

Specifically in the price/performance area, if you look at the last 18 months, in the case of LAN switching we have the best price/performance in Gigabit Ethernet interface switching. Currently, we are shipping about 35% of ports of 10/100/1000. [We have] by far the best price per port in the industry. It's a really very competitive product offering.

The same applies to 10 Gigabit Ethernet. We honestly believe we have the best pricing for 10 Gigabit Ethernet on our Catalyst 6500 [switches] compared to a few other companies, based on price per port. These are not small examples. LAN switching is close to 50% of our product revenues.

**What does Cisco claim is the price difference in these cases?** It's always difficult to compare. In a few cases with 10 Gigabit – the competitors are Force10 and Foundry and most recently Extreme – it is more than a 15% price advantage.

It's a complete price advantage when you consider that we are not asking for a forklift upgrade to 10 Gigabit but can leverage the existing switch chassis and interface, which is not applicable to the competition.

In relevant cases, we have been able to be competitive on price per port. The reason for this is we've been able, even in a downturn in the economy, to maintain a really high level of investment in engineering.

As a result of that, our investments in ASICs and programmable processors are showing up in products, which are eminently cost-effective in terms of bandwidth [improvements] and in terms of feature richness.

We've spent $3.3 billion per year in the last two years in engineering. It's not a question of being superhuman or performing miracles; it's because we've been keeping up with our investments. This means that we can put a great deal of emphasis on new technologies. **46377**

**READ MORE ONLINE**

In an extended version of his interview, Joe Tucci discusses EMC's relationships with IBM and Microsoft:
**QuickLink 46431**

Mario Mazzola talks about Cisco's approach to VoIP and the future of networking technology:
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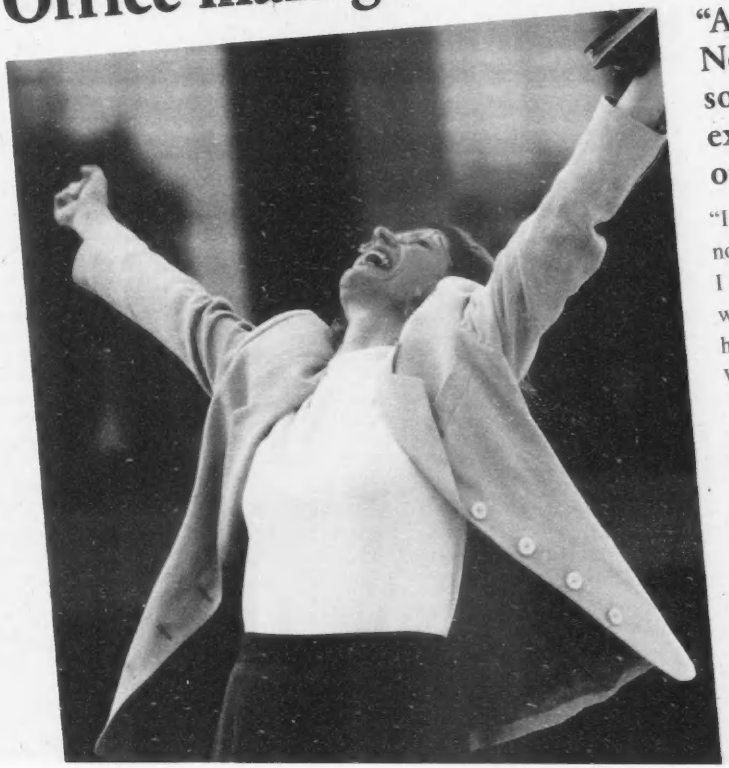
TEN TIMES

# Office manager escapes clutches of desk



## "At last I'm free, thanks to Nokia Mobile Connectivity solutions...and it feels great," exclaims Mary Langer, office manager.

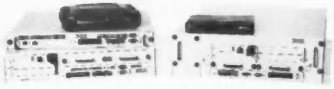
"I thought I was imprisoned at my desk forever no hope of any release – but at last I'm free. N I can visit more suppliers, get better deals and w whenever and however I want. Am I happy or a happy...," Mary enthused at her first taste of freed Workers everywhere from CEOs to Account Mana are rejoicing today at thought of a real breakthrou their working lives. "M Connectivity from Nokia m I can make better use o waiting time at the airport,"

**Secure, Reliable, Freedom and Flexibility**

CEO, Don Baker; "which gives me more family when I get home." Even sales manager, John P was overjoyed as he realized his field sales team visit even more customers, now that they were securely access company data while on the "They can check emails from home, at the o ... " he said. "And best

## Introducing a new era of secure, corporate business freedom and flexibility — Nokia Mobile Connectivity solutions.

Employees throughout an enterprise want to be more mobile and productive — and this can be realized thanks to Nokia Mobile Connectivity solutions. CIOs and IT managers can provide the mobility and security of anytime, anywhere access to users — while empowering everyone from the CEO to field salesforce teams with the information needed to do their work where and when they choose. Nokia Mobile Connectivity solutions include a range of IPSec- and SSL-based client and gateway products that provide secure, appropriate access to corporate email and applications. Enterprises will discover new levels of efficiency from their workforce, while giving them greater freedom to manage their business and personal lives. All solutions are easy to deploy and manage, are based on award-winning technology and are backed by Global Support and Services.



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# AT DEADLINE

## PeopleSoft Sales Hurt by Oracle Bid

**PeopleSoft Inc. reported a first-quarter profit of $24.2 million on revenue of $643.1 million. The revenue total exceeded the software vendor's forecast, but CEO Craig Conway said some sales were delayed or lost to rivals during the quarter because of Oracle Corp.'s ongoing takeover bid. "Some of those deals can't wait," he said during a conference call. "They close for our competitors."**

## European Officials Make Ruling Public

**The European Commission publicly released its 302-page ruling that Microsoft Corp. illegally used its Windows monopoly power to gain advantages for its workgroup server operating systems and Media Player software. The release prompted a strenuous rebuttal from Microsoft, which claimed in a memo that last month's ruling will alter market dynamics and reduce incentives to invest in development.**

## Network Associates To Sell Sniffer Line

**Network Associates Inc. announced plans to sell off its Sniffer line of network management software and focus on IT security products and services. The company is also changing its name to McAfee Inc. as part of the reorganization. It agreed to sell the Sniffer assets to investment firms Silver Lake Partners LP and Texas Pacific Group for $275 million in cash.**

## Vendors Promise Grid Specifications

**A group of vendors that includes Oracle, Cisco Systems Inc., EMC Corp., Hewlett-Packard Co. and Sun Microsystems Inc. said it plans to develop open technology specifications for grid computing. But neither IBM nor Microsoft has joined the group yet.**

# ON THE MARK

**HOT TECHNOLOGY TRENDS, NEW PRODUCT NEWS AND INDUSTRY GOSSIP BY MARK HALL**

MATTHEW FAULKNER

## Nab Bad Guys Trying To Download . . .

**. . . software so you can keep your job and stay out of jail.** Well, you might end up in the slammer for other reasons, but if you use the new service from Open Harbor Inc., it won't be because you let Osama bin Laden get hold of your bits and bytes. The San Carlos, Calif.-based online service for global traders is unveiling a service this week to protect companies whose software can be downloaded over the Internet. According to Beth Peterson, the company's vice president of products, the service uses restricted-party screening (RPS) lists from the U.S., Canada, Japan and other countries to check e-mail addresses, domains, IP addresses and other information to identify sources forbidden to receive goods from suppliers. Open Harbor's automated RPS checks had been limited to hard goods, but software, whether commercial packaged products or your homegrown code, must also comply with government export restrictions. That's why BEA Systems Inc. in San Jose became the first software company to use Open Harbor's service. Carey Garibay, BEA's senior director of sales, says that in order to comply with export laws, her company previously used "an extremely labor-intensive" manual process to check download source information. Given a daily average of 5,000 downloads, she says, Open Harbor's service freed a lot of folks from hard work. And, maybe, BEA's execs from doing hard time.

**1/10 OF A SECOND**
The time it takes Open Harbor to review 8 million trade rules

### Fanatical fans, foolishness and fraud . . .

. . . prompted Bill Schlough, CIO of the San Francisco Giants, to install the MailFrontier Enterprise Gateway from MailFrontier Inc., located in nearby Palo Alto. He says irate fans sometimes put team executives on endless mail lists, and on occasion, a user would, as he delicately put it, "practice poor e-mail etiquette," resulting in a deluge of spam from salacious sites. But it was the threat of fraud that prompted Schlough to get MailFrontier to protect his 150 business users. "Fraud pushed us over the edge," Schlough says. The elaborate schemes criminals use to get passwords, credit card numbers and other personal data "are hard enough for tech types to determine," so he doesn't expect end users to detect them. Because the virus crisis first hit in the 1990s and the spam slam only recently, Schlough, like most CIOs, has two separate vendors with distinct point products to fight the evil twin attackers of e-mail. But, he says, "an integrated approach may be our next step" for overall message management.

### Track down security threats . . .

. . . and even locate and monitor VoIP devices on your WAN when Neon Software Inc. in Lafayette, Calif., on Wednesday releases the 8.5 upgrade to its network-mapping tool, LANsurveyor. The new version polishes up its router interface connection management functions and leverages Active Directory to help push agent software to connected clients. You can also use LANsurveyor to find and shut off unsecure rogue wireless access points as well as to monitor and manage Session Initiation Protocol devices such as VoIP handsets. The tool lacks some key network management features of competing products such as OpenView and Unicenter, but since it starts at $495, it also lacks their hefty price tags.

### Apple to challenge SAN market pricing . . .

. . . with its fall '04 release of Xsan, its storage-area network file system for Mac OS X. In beta now, Xsan includes cascading fail-over, volume management, multipathing and other advanced SAN features. Positively retro, however, is the $995 price. Moreover, Tom Goguen, director of storage software at Apple Computer Inc., brags that before the end of the year, you'll be able to deploy a full hardware/software SAN system from Apple for about $30,000, "compared to the $200,000 IBM, Sun and others charge." You Windows, AIX and Solaris types need not feel left out. Certified third-party tools are already available to link you into the Apple SAN.

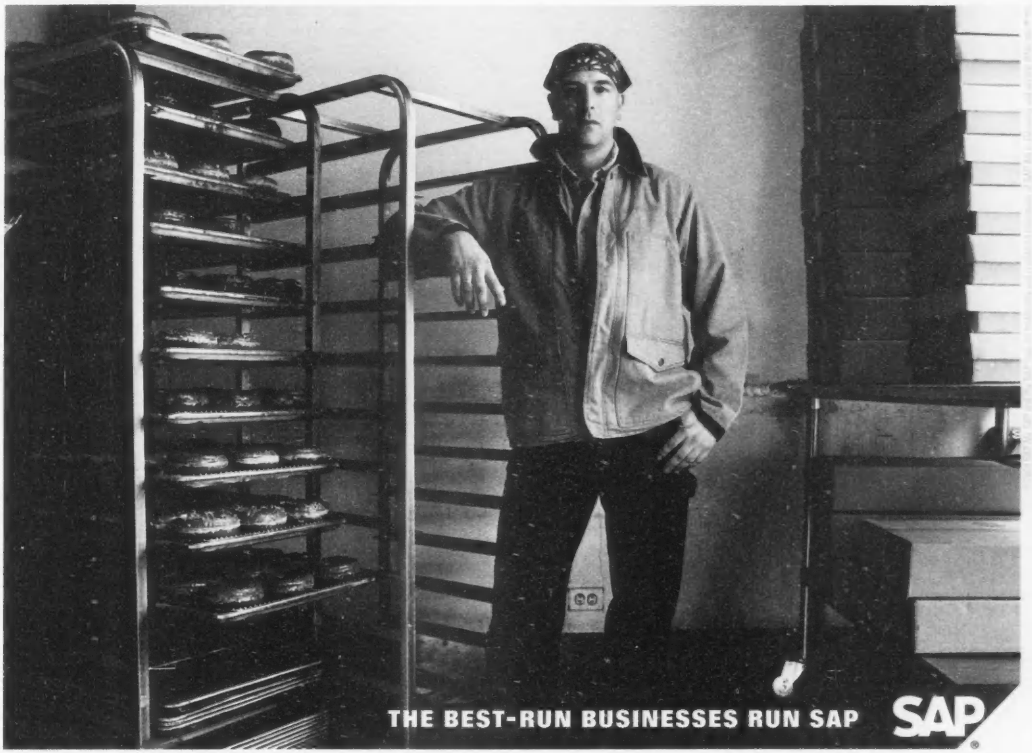
**$3** Cost per gigabyte of RAID storage from Apple Computer

MARTY HOWARD plans to get the most out of his remaining enterprise apps – but he'll push them off-site to do so.

### CIO puts IT on app diet . . .

. . . and exercises those that he keeps beyond their normal limits. "We need to get by with a lot fewer applications in our portfolio, and we need the ones we keep to do more," says Marty Howard, senior vice president and CIO at Patient Care, a regional home health provider in West Orange, N.J. His goal is to run only three enterprise apps — and all of those he plans to have hosted off-site, as he's already doing with his CRM service from Salesforce.com Inc. in San Francisco. Howard says he's pushed Salesforce.com beyond its everyday customer management features to become Patient Care's patient-tracking and help desk application. And he'll be tossing out a slew of legacy custom software in favor of a hosted app this summer. "With fewer apps to manage," Howard argues, "IT becomes a driving force in the business and not just a DP shop." **46400**

# COMPANIES THAT THOUGHT THEY COULDN'T AFFORD SAP RUN SAP.




You don't have to be big to think big. Or to run SAP.® With a variety of solutions for small and midsize businesses, SAP is an affordable choice for growing companies. Working with partners experienced in your industry, SAP can deliver scalable solutions to make your business run more efficiently. And do it faster than you ever thought possible. Visit sap.com/value or call 800 880 1727 to see big ideas for your company.

# IBM Refocuses WebSphere on Service-oriented Architectures

## Vendor claims approach will help companies gain business flexibility

BY CAROL SLIWA

IBM LAST WEEK unveiled an update to its WebSphere software line and a set of services intended to assist companies building out service-oriented architectures — a development approach the vendor claims is essential for users to respond to changing business needs.

Bob Sutor, director of WebSphere software, said customers can expect a "multimonth blitz of news" from IBM focused on service-oriented architecture (SOA).

Companies that use an SOA approach develop applications by assembling software components, or services, that define reusable business functions or processes.

IBM's new WebSphere Business Integration (WBI) Server Foundation Version 5.1, the replacement for the enterprise edition of its application server, adds support for the Business Process Execution Language (BPEL) for Web Services, which Sutor said will help with building SOAs.

The XML-based BPEL can be used to define how business processes interact, including the order in which tasks must be performed and the types of data to be shared. IBM, Microsoft Corp. and BEA Systems Inc. published the BPEL specification in August 2002 and submitted it to the Organization for the Advancement of Structured Information Standards.

### Few Users Yet

But with the BPEL standard yet to be finalized, few companies have used it, in part because major vendors haven't released products supporting it, said Jason Bloomberg, an analyst at ZapThink LLC in Waltham, Mass. Bloomberg said he expects WBI Server Foundation to drive BPEL adoption among large companies that are customers of IBM's software and professional services. He cited manufacturers as likely users, since they have the sort of business processes that could be automated using BPEL.

Clearly, some IBM customers have been building SOA-based frameworks without BPEL or WBI Server Foundation. Wall Street Access Corp., a Manhattan-based brokerage, drew up its SOA plan about a year ago and built standards-based interfaces using the Web Services Description Language for its market data, back-office transaction, order management, compliance, rules engine and security services.

Peter Underwood, vice president of software development at Wall Street Access, said the firm has no need for BPEL, since it doesn't require workflow management of information. Because of that, WBI Server Foundation would be "prohibitive" at $49,000 per processor, he added. Wall Street Access currently uses the lower-priced network edition of WebSphere Application Server, Underwood said.

New York-based Cendant Corp., however, does plan to evaluate WBI Server Foundation for the message-oriented middleware, event-driven notification and other enterprise service bus types of functionality, according to Robert Wiseman, chief technology officer of the company's Travel Distribution Services division.

Firmly committed to an SOA-based framework, Cendant already has built Web services to expose extensive travel content and functionality from internal and external sources. The company this year hopes to add a host-access network to further consolidate regional travel information, such as rail and ferry schedules, from the proprietary systems of its external partners into a single, service-based object layer that its Web services can access, Wiseman said. **46417**

### IBM WebSphere Business Integration Server Foundation

The updated and renamed version of WebSphere Application Server Enterprise features:

- **Native support** for BPEL for Web Services
- **A technical preview** of Common Event Infrastructure for managing the creation, transmission and distribution of business, system and network events
- **Bundled copies** of DB2 and the Tivoli LDAP server
- **Support for** business rules and human workflow
- **WebSphere** Business Integration Modeler and Monitor support (second half of 2004)
- **Support for** z/OS (second quarter) and iSeries (third quarter). WBI Server Foundation currently runs on AIX, HP-UX, Linux, Solaris and Windows.

# HP Responds to Pressure From Anxious e3000 Users

## But idea to convert used HP 9000s to run MPE unsettled

BY PATRICK THIBODEAU

In a turnabout forced by pressure from HP e3000 users, Hewlett-Packard Co. has reopened the possibility of enabling users to convert existing HP 9000 hardware into e3000 systems that run the propriety MPE operating system and its applications.

HP stopped selling new e3000s last fall, so the systems can now be purchased only from dealers of used equipment. The ability to convert a used HP 9000 so that it runs MPE would give users "a surplus of hardware" for keeping the e3000 alive after HP ends its support in 2006, said Ron Horner, legacy systems supervisor at Lady Remington Jewelry in Bensenville, Ill.

HP previously said users wouldn't be offered that conversion option. But in a recent letter to the OpenMPE user advocacy group, HP said that as a result of input from the group's board, it has "reopened" the topic for consideration. It promised an update in June but not necessarily a final decision.

Converting the HP 9000, however, would address only one aspect of keeping the e3000 alive. Users also want HP to turn over MPE operating system source code to a third party to maintain and possibly enhance with new features.

Users, who are feeling increasing pressure to plan for migration as the deadline draws closer, have been pushing HP to decide whether it will release the source code. In a recent survey by Interex, a Sunnyvale, Calif.-based HP user group, respondents said a decision on third-party source code custody is their top priority this year.

> **"I don't think HP really understood what they were going up against."**
>
> **RON HORNER**, LEGACY SYSTEMS SUPERVISOR, LADY REMINGTON JEWELRY

However, HP said in its letter that no decision on the source code issue will be made until the second half of 2005. It cited a list of reasons, including "significant planning and investigation" involving a range of technical, legal and business factors.

That's an unpopular position and "plants the seed in people's minds that they are just stringing us along," said John Burke, an e3000 consultant in Folsom, Calif.

The e3000 user community is very active, and mailing lists receive a lot of traffic. Users trying to extend the usefulness of the e3000, as well as minimize the risk involved with "homesteading" — running the system beyond 2006 — are pushing HP to provide definitive answers.

It's a good sign that HP is continuing to discuss these issues, said Horner, who along with Burke is a board member of Hagerstown, Md.-based OpenMPE. "It's better than silence," he said.

"I don't think they really understood the backlash they were going to get by announcing the end of MPE," Horner said. "I don't think HP really understood what they were going up against."

Converting an HP 9000 to an e3000 is possible because the two systems share similar architectures and use PA-RISC processors, said David Wilde, HP's e3000 business manager.

But that conversion applies only to particular models of HP 9000 systems. Differences in firmware and various components may make it impossible in some cases, said Wilde. "It is something we are investigating," he said. Wilde made it clear that users won't be able to purchase new HP 9000 systems and boot MPE on them. Porting MPE to the HP 9000 in that sense isn't even under consideration, he said. **46422**

# Call for Nominations

ATTENTION IT USER COMPANIES!

**Using a Hot Technology with Real Business Value?** Nominate your vendor for Computerworld's Innovative Technology 2004 Awards

COMPUTERWORLD INNOVATIVE TECHNOLOGY 2004 AWARDS

For these special awards, we're asking IT customers — **Computerworld's** readers — to nominate the vendors they believe offer leading-edge technology products or services that provide business value to customers.

## Eligible Nominees

**Computerworld's Innovative Technology awards are "customer choice,"** which means Computerworld is asking those companies that use technology (but don't produce or sell it) to nominate vendors. The awards are devoted to identifying truly breakthrough technology – from vendors with long histories or those new to the industry – and showcasing how leading organizations are using this technology to achieve business payback.

## Evaluation & Results

From May 17 to June 14, 2004, Computerworld will survey those vendor nominees about their technology applications. A panel of outside experts and Computerworld editors will then review the surveys and choose the winners. Survey results and stories that offer practical advice from IT leaders using these technologies will be published in the September 13, 2004 issue of Computerworld, as well as online at Computerworld.com.

**Nominate online at www.computerworld.com/research/innovativetech from now through May 10, 2004. Questions? Contact innovativetech@computerworld.com**

## BRIEFS

### Sales Up, Profits Down at Microsoft

**Microsoft Corp. reported a 17% year-over-year revenue increase for its third quarter and said all product divisions met or exceeded sales expectations. Revenue totaled $9.18 billion in the quarter that ended March 31. But profits fell 38% from the year-earlier level to $1.32 billion. The drop-off was partly due to $1.89 billion in charges stemming from an antitrust-related fine imposed by European officials and Microsoft's legal settlement with Sun Microsystems Inc. [QuickLink 45957].**

### MCI Emerges From Bankruptcy

**MCI Inc. emerged from Chapter 11 bankruptcy protection, six months after a federal judge approved its financial reorganization plan. The company, which formally changed its name from WorldCom Inc. last week, said it currently has about $6 billion in cash and $5.5 billion in debt. "I don't think we view this as the finish line, but it's now time to start a new race," said CEO Michael Capellas.**

### Jump in U.S. Sales Aids SAP's Profits

**SAP AG said its first-quarter profits rose 23% year over year, primarily as a result of increased software sales in the U.S. The vendor reported net income of $279 million for the quarter, up from $220 million a year earlier. Total revenue increased just 3% to $1.85 billion, but SAP said U.S. sales jumped 45%. [To read an interview with the CEO of SAP's U.S. subsidiary, go to our Web site: QuickLink 46403].**

### Short Takes

**SIEBEL SYSTEMS INC. said it has bought EONTEC LTD., a Dublin-based vendor of banking software, for $70 million in cash. . . . MICROSOFT said it has agreed to settle a pricing-related class-action lawsuit in Minnesota.**

# Oracle 10g Could Ease DBA Tedium, Users Say

## Conference attendees eye upgraded database's self-management capabilities

BY MARC L. SONGINI
TORONTO

ORACLE CORP. users took stock of the company's new 10g database here last week, saying that the software's automated management and self-tuning features could reduce the amount of drudge work they have to do.

With 10g, Oracle has made strides in developing a database that's easier to manage, said Kimberly Floss, president of the International Oracle Users Group. Floss works as a database administration team leader at PepsiCo Inc.'s Beverages & Foods unit but noted that she was speaking only in her capacity as head of the Chicago-based IOUG, which was holding its IOUG Live 2004 conference here.

If users ran into a problem with a SQL statement in previous versions of Oracle's database, "you would play with it and try to work your way through to figure out which solution was best," Floss said. "These [new features] do the work for you, so you don't have to spend the time trying all the different scenarios."

Floss noted that the automated tools built into 10g still require IT staffers to make the final decisions on code changes and other modifications. Instead of replacing database administrators, the new technology frees them from tedious tasks and lets them focus on more strategic matters, she said.

At the IOUG show, Oracle executives touted the virtues of 10g in an attempt to sell users on upgrading to the new release. "There are two perceptions that are no longer true — that [the database] is expensive and complex," said Ken Jacobs, vice president of product strategy and server technologies at Oracle.

Jacobs declined to disclose the number of users who have bought 10g thus far, but he said hundreds participated in the beta-test program. He predicted that there will be a spike in installations this summer as applications such as Oracle's E-Business Suite 11i start to be certified for use with 10g (see box).

Rich Niemiec, CEO of TUSC, a Lombard, Ill.-based Oracle consulting and technical services firm, is testing 10g on Linux and Solaris systems as a stand-alone product and in grid computing configurations. He said improvements to Enterprise Manager, Oracle's database administration tool, enable it to issue alerts and recommendations, as well as collect statistics on system and network performance.

The new database, which began shipping in January, includes expanded support for grid computing.

As leasing contracts on Unix systems expire, there likely will be an increased move toward 10g-based grid computing setups that use clusters of less-expensive servers, said William Burke, a database consultant in Plano, Texas, and the IOUG's executive vice president. He added that Oracle has improved the migration process with 10g, so any upgrade challenges should be "nominal." **46413**

### Application Support

**At the IOUG conference, Oracle said that:**

- It hopes to certify by May or June that 10g will work with the latest release of its E-Business Suite 11i applications, Version 5.9.
- The Version 5.10 upgrade to 11i, due this summer, will include out-of-the-box support for 10g.
- PeopleSoft and SAP are expected to certify 10g for use with their applications this summer and in Q1 2005, respectively.

# Personnel, Contract Issues Complicate BPO Initiatives

## Users cite hurdles in outsourcing of business units

BY THOMAS HOFFMAN
NEW YORK

Early adopters of business process outsourcing services last week said they have been able to save money and improve productivity by handing off control of departments such as human resources and finance and, in some cases, the systems that support them.

Nevertheless, several BPO users who spoke at a conference held here by market research firm IDC said they had to tackle tricky personnel and contractual issues and go through steep learning curves because there was little historical context to draw upon.

"Ten years ago, the solution was the hiring of arms and legs," said Donna Kinnaird, executive vice president at Swiss Re Life & Health America Inc. In 1994, the Stamford, Conn.-based insurer signed on with Computer Sciences Corp. to manage more than 2 million life insurance policies and supporting technology, such as an interactive voice response system.

"Now it's much more of a value and knowledge proposition," Kinnaird said. She added that more-specific performance metrics, such as how much it costs to manage the policies, were worked into a 10-year, $700 million contract renewal six months ago.

Still, establishing reasonable BPO performance metrics continues to be a problem for users and vendors alike, said John K. Halvey, a partner in the technology finance and outsourcing group at law firm Milbank, Tweed, Hadley & McCloy LLP in New York.

BPO users often must contend with thorny personnel issues as well. In late 2001, Hydro One Inc. signed a 10-year, $730 million pact to outsource its finance, supply chain management and CRM operations to Capgemini, along with IT support for those functions. But first, the Toronto-based utility had to negotiate with two labor unions on a staff-reduction plan that was needed to achieve its 30% cost savings target, said Jeffrey Smith, Hydro One's director of finance.

Although most companies outsource business processes to cut costs, that isn't always the case. Canadian Imperial Bank of Commerce in 2001 signed a seven-year contract to outsource management of its HR operations to Electronic Data Systems Corp. — a deal that it expects will be cost-neutral overall.

However, the outsourcing move was partly designed to help CIBC avoid the need to invest "tens of millions of dollars" in IT upgrades, said Danielle Kay, a senior HR director at the Toronto-based bank. She added that EDS last year consolidated 30 human resources systems previously used by CIBC onto a common PeopleSoft 8.3 applications platform. **46419**

### ALL ABOUT OUTSOURCING

For full coverage of IT outsourcing issues, go to our Web site:
**QuickLink a2290**
**www.computerworld.com**

*Continued from page 1*

## CA's Future

So far, most users appear to be comfortable with that.

Paul Francis, senior manager of systems security at Shaw's Supermarkets Inc. in West Bridgewater, Mass., said he doesn't expect any negative repercussions. "Things have been pretty smooth with CA in spite of what's happened," he said. "There's a good management team in place. I don't expect any disruption." Shaw's uses CA's eTrust software.

**PROBING QUESTIONS**
Get comprehensive coverage of the federal probe of CA online:
QuickLink a1640
www.computerworld.com

CA products will continue to deliver value, said Clark Ammons, production and systems manager of information systems at Washington University in St. Louis. "We purchase the product and not the people behind the product," he said. "There is a lot of thought and review process before there is ever a purchase done from any company."

### Leadership Speculation

CA this week is expected to appoint board member Kenneth Cron as interim CEO and continue searching for a permanent replacement. Analysts expect the new CEO to come from outside the company.

"There is no clear No. 2" within CA, said Gregg Moskowitz, an analyst at Susquehanna Financial Group LLP in New York. "They have some serviceable executives who can step in for the time being."

There has been some speculation among IT and financial analysts that Steve Mills, senior vice president and group executive in charge of IBM's Software Group, could be in the running as a replacement for Kumar. However, Mills told *Computerworld* last week that he has no outside CEO aspirations.

"I am a CEO [of IBM's Software Group]. I have a spectacular job," Mills said. "Anything else would be a comedown."

Barrenechea scoffed at Mills becoming CA's CEO. "Software is an afterthought at IBM," he said. "[Mills is] the VP of afterthought."

CA and Kumar could still face legal action. The U.S. Securities and Exchange Commission warned CA in January that it's considering civil penalties against the company. The U.S. Department of Justice has filed court documents showing that it believes more executives at CA knew about past accounting violations than the four former employees charged so far. Kumar is widely believed to be a target of the investigators' continuing inquiries.

CA has taken steps to replace executives forced out by the accounting scandal. Earlier this month, it hired Jeff Clarke, the well-regarded former head of global operations at Hewlett-Packard Co., as its chief financial officer.

Barrenechea, who moved to CA from Oracle Corp. last year, said that his role hasn't changed as part of the management reshuffle and he doesn't expect it to. And Barrenechea didn't evade a question about whether he jumped from the frying pan into the fire when he moved to CA.

"I've gotten used to walking on hot coals," Barrenechea said.

Some users appear resigned to the same fate. One customer who has had a rocky experience with CA said the management turmoil can't make things any worse. "We're never happy with their customer service," said Win Shih, head of automation at Saint Louis University's Pius XII Memorial Library. "If the company changes leadership, it could be good or bad. It depends on the new person."

Still, users such as Kay Rozeboom, a database administrator at the Iowa Department of Administrative Services, remain optimistic. "Our support has always been excellent," she said. "They've had management shake-ups in the past, and I can't say that it's affected us negatively before." **46414**

*Cowley writes for the IDG News Service. Computerworld's Marc L. Songini contributed to this report.*

## IBM's Mills Speaks Out on CA...

**STEVE MILLS**, *senior vice president and group executive in charge of IBM's $14 billion software business, spoke with* Computerworld's *Don Tennant last week about the government investigation of rival Computer Associates. The interview took place on April 19, two days before CA announced that Sanjay Kumar had stepped down from his post as CEO.*

**What do you make of CA's legal problems, especially now that CEO Sanjay Kumar is under scrutiny?** All of these things are focused on individuals. If there's a management change, I would suspect they would continue to deliver the products they're delivering now. That's not likely to change in any way. The question is, Will the players change? That's anybody's guess, but it obviously appears pretty serious.

MILLS: CA customers could "turn to IBM for alternatives."

**Would a change of players have an impact on IBM in any way?** We deliver a very rich set of products to replace CA products, so customers who were losing confidence in the company could certainly turn to IBM for alternatives.

**Are you using CA's legal problems as a sales tool to lure CA users to IBM?** CA does enough on their own, independent of what the government is doing, to create opportunities for us. We don't need the Department of Justice to help us build that business. CA has a very mixed reputation with customers. CA tends not to make new investments in any of these mainframe-based products. There's a lack of add-ons and features and updates; they don't keep pace particularly well. We find many businesses want to get off of CA tools.

**Do you think you beat CA to the punch by acquiring Candle Corp. [QuickLink 45895]?** Candle is a major provider of tooling on the mainframe. The disposition of so many companies that were started up in this area has not necessarily favored IBM. They'd get acquired by Computer Associates, and Computer Associates just wants to charge the customer a lot of money and not give them any incremental value. We've watched this movie replay itself over and over again. So we have a lot of concerns about what happens to some of these modest-size independent providers of tooling for the mainframe. **46421**

**MORE ONLINE**
To read more of this interview with Mills, visit our Web site:
QuickLink 46328
www.computerworld.com

## ...And CA's Barrenechea Responds

**MARK BARRENECHEA**, *senior vice president of product development at Computer Associates, took issue with statements made about CA by Mills in the interview posted on our Web site on April 20. He spoke with* Computerworld's *Don Tennant on April 22 to rebut those comments.*

**Some IT and financial analysts have put Steve Mills on the list of potential replacements for Sanjay Kumar. What's your response to that?** Let me put that in perspective from what I see. IBM in fiscal year '03 did $90 billion in total revenue. The software business did just under $14 billion. So 16% of IBM's revenues are software. Software is an afterthought at IBM. It's all about global services and hardware. [Mills] is the VP of afterthought.

BARRENECHEA: "[Mills] is the VP of afterthought."

**Mills suggested that CA isn't particularly innovative. What's your response?** I've been here at CA now for close to a year [following a move from Oracle], and I find the organization one of the most skilled and innovative I have seen in the industry. When you look at our Q3 results, we grew 42% in subscription licenses. When you look at IBM's growth [for its first quarter] that they just announced recently, [and] you [adjust for] currency, they grew at 3%. We are the world's leader in management software. If you compare our innovation to IBM's, IBM has a long history of failed attempts. We can look at OS/2 not being a successful operating system. We can look at SNA losing out to IP. We can look at Lotus losing the e-mail, Word and Excel battle.

**When I asked Mills about IBM's acquisition of Candle Corp., he said CA has a history of acquiring companies like Candle and "just wants to charge the customer a lot of money and not give them any incremental value." What's your response?** Candle is a very interesting acquisition in IBM's history. After 40 years, IBM couldn't get performance management right. So they had to go out and buy Candle.

**Did CA ever look at Candle as an acquisition target?** No. The value we're bringing to clients today around Sysview and OPS/MVS is unsurpassed. And after 40 years, [IBM] couldn't build performance management like [CA's] Unicenter NetMaster. So we never looked at Candle. We weren't interested, and we're still not interested. **46420**

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To read the full interview with Barrenechea, visit our Web site:
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MARYFRAN JOHNSON

# Sins of the Father

AS ANY ENTERPRISE CUSTOMER who's spent time with Sanjay Kumar will confirm, the former CEO of Computer Associates is a genuinely nice man, a talented business leader and a well-respected figure in the industry. In every regard, Kumar is viewed as a vast improvement over his contentious mentor, infamous CA co-founder Charles Wang.

So it was a sad moment for many last week when Kumar resigned his CEO role in the merciless glare of two federal investigations into CA's accounting practices. He stepped down but not out, taking on the vanity title of "chief software architect" — a sign of continuing support from his board that may lend some comfort to the customer base.

But Kumar still faces his own legal nightmares as the Securities and Exchange Commission and Department of Justice probes grind on. So far, 14 CA executives have resigned or been fired in connection with the widening scandal. It's an ugly but familiar tale of corporate greed.

One fact is painfully clear, however. Regardless of what he knew and when he knew it, Sanjay Kumar was the company president while former CFO Ira Zar and other now-indicted executives engaged in illegal accounting practices, securities fraud and obstruction of justice. Zar claims he met regularly with two as-yet-unnamed top executives who knew he was cooking the books. At the time, he reported to Kumar, who reported to Wang, who is now retired and enjoying life as a wealthy sports mogul.

Anyone familiar with the company's history knows it was Wang who fathered its business policies and nurtured CA's sales practices. When Kumar, the longtime heir apparent, took over as CEO in 2000, he wasted no time before making deep, substantive changes in Wang's kingdom. He revamped the accounting methods now under scrutiny, reformed the sales force, replaced most of the board and steadily rebuilt CA's shattered reputation with customers. That's why IT executives have been willing to keep the faith, even as the feds encircle CA's top echelon. "It's been going on for so long," one customer remarks, "and Computer Associates isn't the only company that's had this sort of problem."

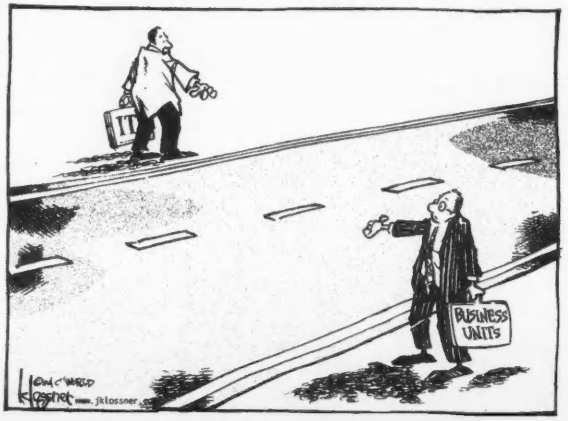
In the meantime, CA's rivals aren't waiting for any bodies to cool.

Steve Mills, head of IBM's software business, made an appeal to readers concerned about his rival's troubles in a *Computerworld* interview last week [QuickLink 46328]. "We deliver a very rich set of products to replace CA products," Mills said, ever so helpfully. "So customers who were losing confidence in the company could certainly turn to IBM for alternatives." Other enterprise vendors will likely extend a solicitous hand as well.

"The biggest challenge facing CA right now is to reassure customers and partners," says analyst Michael Dortch at Robert Frances Group. "To the extent that CA is successful at this, most customers will continue to care little, if at all, about who's running what."

That may be true in the short term. But smart CIOs will keep a wary eye on the worst-case scenario of CA — the company itself — ending up with a criminal conviction. That's what destroyed accounting firm Arthur Andersen.

Federal investigators seem to be drilling toward one bedrock question: How deep did CA's culture of corruption — this willingness to invent 35-day months in order to prop up quarterly sales numbers — really go? **46389**




PIMM FOX

# Who's Your Baghdaddy?

DIDN'T YOU KNOW that that phrase is the standard greeting for troops in Iraq?

No? Well, IT is good at burying its head in the sand.

The IT industry tends not to get involved in public issues unless it's talking H-1B visas, tax credits for research and development, or government contracts.

That ought to change. In fact, IT should mount a large offensive to educate and connect the U.S. public with our troops in Iraq.

What's involved? I'm talking about free hardware and software for troops now serving overseas as well as for their families. What's needed for starters is a branded effort that would give computers to the families of servicemen and -women who can't afford them. The IT industry and technology companies could offer free Internet and e-mail access, as well as software to build Web sites, transfer files and share music and photos between families and troops overseas. Companies ought to be buying and donating DVD burners, and music industry firms should be shipping CDs. The digital world should turn its hand to something analog: morale building.

Nonlethal IT is already heavily used by soldiers in the field to allow them to stay connected to home. MP3 players, e-mail, DVD movies, satellite dishes and laptop computers with Internet access are all in use, and the Armed Forces Network operates a radio feed from Riverside, Calif., that's beamed into Iraq.

It's just as common to see music files shared among GIs as it is to see bootleg DVD movies sprout up only weeks after their Hollywood release.

The military brass isn't bashful about using IT to put a personal face on their mission. For example, the 1st Armored Division, the U.S. Army tank division deployed in Iraq, uses its Web

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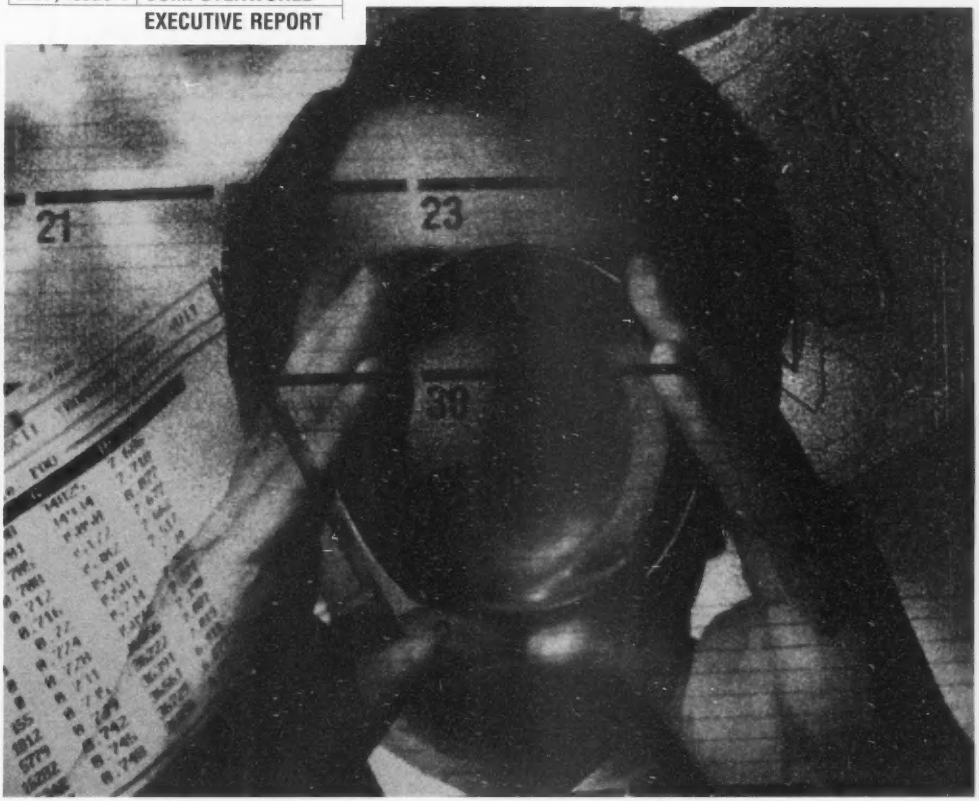


BUSINESS INTELLIGENCE SERIES

# Charting the Course

## A Guide to Evaluating Business Intelligence Products Part I

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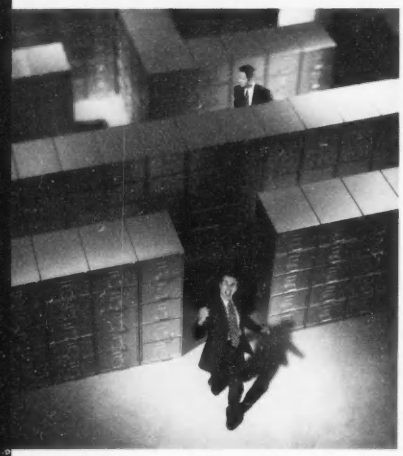

BUSINESS INTELLIGENCE SERIES

by Shaku Atre

# Charting the Course

## A Guide to Evaluating Business Intelligence Products

More than half of all business intelligence projects fail to meet enterprise goals and thus cannot be considered a success. Decision makers at all levels are becoming more skeptical about their purchasing decisions, as many software vendors fail to deliver on their promises.

The goal of this two-part series is to provide business and IT managers within enterprises a roadmap for evaluating and selecting BI products. This first part of the series provides a step-by-step process for identifying the organization's needs for BI applications – and for quickly eliminating vendors and products that do not satisfy these needs.

The second part of the series will offer an effective set of templates and best practices with which you can perform in-depth product evaluation. Some of the functions discussed in Part II will include:

- Balanced scorecards and key performance indicators (KPIs)
- Enterprise portals
- Querying, reporting and analysis of information
- Data warehouse modeling and deployment
- Meta-data management
- Transformations, cleansing and transfer of data
- Online Analytical Processing (OLAP)

### Introduction to Best Practices

Software vendors use such expressions as "benchmark comparisons," "out-of-the-box functionality" and "limited-time discounts" to lure distracted IT and business managers into making decisions that have not been properly thought through. Unfortunately, this haste frequently results in wasted time and money, as well as missed opportunity due to unsuccessful BI implementations.

Due to the nature of BI, solutions query, rather than write, data. Thus, the BI environment can be identified as "data out," as compared to the "data in" environment of Online Transaction Processing (OLTP). Despite this basic difference, OLAP and OLTP can coexist.

Through careful evaluation of business needs and the use of proven methodologies, decision makers have shown it is possible to successfully evaluate BI products. Atre Business Intelligence Best Practices (ABIBP) is one methodology that has helped enterprises identify their BI needs and match those needs to products. For more information on ABIBP, refer to the white paper, "Business Intelligence Success Is Never an Accident," by Shaku Atre (Computerworld, Sept. 15, 2003).

When evaluating BI products, it's important that organizations undertake the project with realistic expectations. The table on page 4 lists some of today's BI myths and realities.

### Deciding on a BI Solution

Before evaluating BI products, it's important to understand your needs. Realize that a single product is unlikely to meet all your requirements. Most BI solutions are integrations of multiple products, each addressing the components described here:

**Balanced scorecard.** These track business progress through key metrics. They use financial data, customer information, internal business processes and iterative growth to translate strategy into action.

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**Key Performance Indicators.** KPIs are performance indicators of the organization as a whole; they indicate whether the enterprise is meeting its stated objectives.

**Querying and reporting.** This is the ability to access information and present it in an easily understood way. Functions include ad-hoc queries across multiple tables and data sources; focused business reports; batch-type production reporting; multiple report formats; and multiple queries per report. Reporting solutions should draw on the full range of data assets and data sources to deliver one version of the truth. Therefore, they should integrate easily with existing IT infrastructure and provide different levels of sophistication.

**Enterprise portals.** These form an easy way to centralize and share information across the organization. They are Web sites that act as gateways to corporate information, enterprise applications, organizational processes and business resources.

Enterprise portals let users personalize their view and content; perform efficient searches; tag "best bets"; profile documents for better discoverability; and receive notifications of changes to their subscribed documents, folders, categories or search queries.

**Relational database management systems.** RDBMS store data in the form of interrelated tables. They are designed to easily determine the relationships among data elements and allow different ways to write and read data.

**Data warehouses.** A data warehouse is a collection of subject-oriented databases that support business decisions. Because it organizes and stores data specifically for querying, reporting and analysis, the design of a data warehouse database differs significantly from the design of an OLTP database.

**Meta-data management.** Unlike ordinary data stores, a meta-data repository is not designed to store business data for a business application; rather, it stores contextual information about the business data, or meta-data. The difference is crucial, and often overlooked. Examples of the contextual information found in a meta-data repository include the business data's meaning and content; policies governing it; its technical

| Myth | Reality |
|---|---|
| Because BI projects are usually initiated and sponsored by a single department, products should focus on the requirements of that department alone. | BI is the first step in achieving a holistic view of an organization. It may eventually deliver substantial payback across the organization, and BI products should be deployed with enterprise-wide expansion in mind. |
| Comprehensive reporting requirements, performance metrics and return on investment (ROI) can be fully defined through a detailed needs analysis before BI is implemented. | BI projects run into more unknowns than a regular OLTP project that delivers a finite set of functions. Therefore, BI project planning is not a one-time planning activity, but rather an iterative development process – human resources, time lines, scope, deliverables and plans are continuously adjusted to achieve success. It's always been difficult to come up with believable ROI; it's even more challenging to estimate ROI for a BI environment. Therefore, BI projects should have short time lines, and highest priority items should be delivered per iteration. |
| There will be a single enterprise-wide BI product in the organization. | With the current rate of mergers and acquisitions, a single BI product is a pipe dream. Focus on mapping your needs to product functionality and technical architecture. Paying more attention to standards is a good strategy that reduces reliance on any single vendor. Over-reliance on one vendor can have undesirable side effects; the vendor could take over the driver's seat on your project, or alternatively could go out of business. |
| Only users internal to an organization will use BI querying and reporting. | BI requires integration of knowledge about customers, competition, market conditions, vendors, partners, products and employees at all levels of an organization. |
| BI is just another name for reporting and historical trends analysis. | BI is a shift in thinking, planning and execution across an enterprise. To succeed with BI, an organization requires a harmonized culture in which everyone is cognizant of the strategic vision. For example, BI applications may have the ability to automate decision tasks by looking at frequently occurring, time-dependent predictive processes such as price changes and special offers for certain customers. |

attributes; and programs used to manipulate it.

**ETL.** Source data for BI applications comes from a variety of platforms, managed by a variety of operating systems and applications. The purpose of the extract/transform/load (ETL) process and application is to merge data from these heterogeneous platforms into a standard format for BI target databases.

A BI system should not be a collection of stand-alone target databases, each with its own ETL process; rather, it should be an integrated data store. For this reason, it's critical to perform common data transformations for all BI target databases only once, then reconcile that data.

**Data cleansing.** This is the process of reformatting, reconciling and refining data during ETL. Data cleansing activities include correcting or identifying mis-fielded names and addresses; frequency of occurrences in a field (including blanks and zeros); shapes of data in a field (such as xxx-xxx-xxxx for a U.S. phone number; and distribution of business addresses vs. residential addresses. These activities may be either simple or complex.

Simple data cleansing, or "scrubbing," provides basic cleansing of invalid data, which may involve case correction, standardization, splitting a source data field and removing spaces or special characters. For example, simple cleansing would convert "mr. rob ball Layton" to "Mister," "Rob," "Ball" and "Layton" and place these fields in four different columns.

Complex data cleansing performs de-duplication, data reformatting and data cleansing. This may involve phonetic and non-phonetic fuzzy-matching as well as user-defined cleansing rules. For example, complex cleansing might determine that "mr. rob ball Layton" is the same as "Mister," "Robert," "Bell" and "Leighton," and then convert an ETL insert into a target update.

**Real-time replication.** This is the ability to propagate source data changes to the target system in real time. Real-time replication systems normally use database transaction logs, triggers or time-stamp columns to capture incremental changes made to source data and flow those changes to the target system with minimal latency.

**Analytics and OLAP.** OLAP systems handle queries required to discover trends based on vast volumes of information. Data is organized into multidimensional cubes, giving better performance than relational tables. The basic unit of a multidimensional cube is called a "measure" and is defined as the unit of data that is being analyzed. Each dimension is divided into units called "members," which are typically organized into a hierarchy. The dimensions and measures defined for the cubes in any OLAP system depend on the types of analysis that are important to the enterprise.

**Mobile applications.** These connect mobile devices to existing ERP, CRM and back-end systems and bring mobile workers access to vital corporate systems and information. This results in operational decision-making efficiencies, increased responsiveness to customers and a decisive competitive advantage.

The selected solution should help the organization develop future applications with lower labor costs (computer cycles are getting cheaper, while the cost of people is rising). The solution should also connect information across the enterprise. That information represents customers, money, products, policies, employees and partners.

Typically, the selection of one software package involves the evaluation of others, domino-style. For example, selecting an ETL solution also involves evaluating a data-cleansing tool and RDBMS interface software. As a result, the selection process for BI products is more involved than many managers expect.

## Selection Process

Too often, evaluators buy a product for a specific solution now, and must then address pre- or post-requisites during implementation. This can lead to failure. Working through all anticipated requirements is challenging, but worthwhile.

We advocate a proven 5-phase selection approach for BI components

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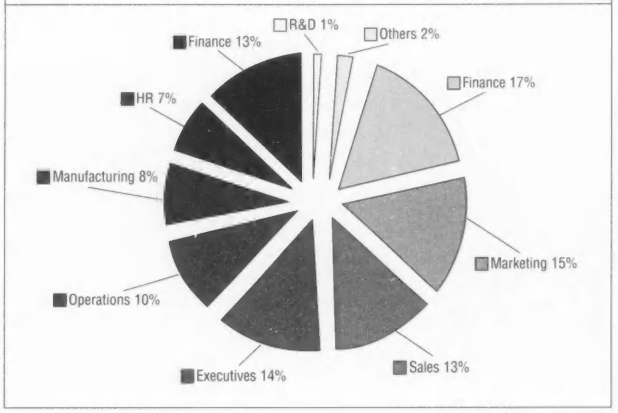
and products:

1. Needs identification
2. Elimination
3. Vendor evaluation
4. Product evaluation
5. Recommendation

Here we focus on phases 1 and 2, bringing you to a point where you're ready to evaluate a small list of BI vendors and products. In Part II, we will discuss Phases 3 – 5.

**Figure 1** **BI Project Sponsors by Department**




### Phase 1: Needs Identification

In this phase, corporate vision, IT direction and business needs must be evaluated. Considering future business, functional and technical requirements is also critical. If the business outgrows the capabilities of the original products or processes, it will be expensive and time-consuming to convert to another product later.

Some of the challenges with existing or newly implemented systems include:

- Data does not become available quickly enough.
- The data model is difficult to manipulate.
- The information provided is insufficient.
- The reports are too complex for line managers.
- The product does not have the required functionality.
- There's a lack of standard reports and queries.
- There's a lack of buy-in and commitment among users.
- Many frequently asked questions cannot be answered.
- Poor data quality or warehouse design results in conflicting results.
- Sponsors are frustrated and have abandoned the project.

Of course, it's ideal to find a product that eliminates all of these problems. But usually that is impossible. Therefore, organizations should prioritize to ensure that no major compromises are made regarding the top five criteria.

During needs identification, organizations should conceptually identify the first release of the BI solution. Which metrics will be created, from which data sources, located on which server platforms, and presented to which user groups? The first release has to be a success. Therefore, its scope shouldn't be overwhelmingly large and should deliver results within six months.

One major activity during this phase is to collect a balanced representation of business needs from all stakeholders to ensure continued support. This will help ascertain the capabilities of the right BI product.

So who defines the needs? It's important to bring in technical, business and corporate perspectives. Wide representation and diverse viewpoints now produce better decisions and fewer surprises later. At the same time, the project manager must avoid a bureaucratic nightmare by preventing the team from becoming unwieldy. There shouldn't be more than six people working full time at this stage. Team members should communicate with users in their departments to identify "pain points."

BI products must support large volumes of data stored in disparate OLTP and OLAP systems, and must deliver information based on that data to both internal and external users through various delivery systems. Thus enterprises must carefully assess their application development environment – which generates additional questions. Application-related needs to be considered during this phase include:

- Users' functional requirements, including top 20 business performance metrics.
- A list of data sources that contain most of the operational data.
- Preferred operating systems.

• Hardware environments deemed strategic.

• RDBMS environments.

• Currently deployed decision-support systems (including data warehouses, data marts and querying and reporting tools).

• Both current and projected data volumes.

• Current and projected user groups, numbers and locations.

• Release promotion process.

• Change-control requirements.

At this point, it's important to define the focus of your BI project. In most cases, a department with a particular business need drives the initial BI effort (see Figure 1). Nevertheless, IT managers and decision makers must understand the requirements of other potential BI users.

The Needs Identification phase should culminate in a brief report focusing on:

• What we do well today.

• Which user groups are happy with the information provided.

• Which user groups are not happy with the information provided.

• Which queries and reports are important but difficult to support, creating pain points.

• What data is available to address these pain points.

• External data needs.

• Which information can be easily made available with a BI application.

• Is it necessary to change any business processes to provide the information?

• Establishment of KPIs and a balanced scorecard.

### Phase 2: Elimination

Now you're ready to eliminate certain products and vendors. Once you complete this phase, the number of remaining candidates should be four or, at the most, six vendors. This will keep your detailed product evaluation from becoming a bureaucratic nightmare.

At the very least, any product that makes the final cut must provide easy access to data on disparate sources (including mainframes, enterprise servers, federated databases, workstations and external sources) and multiple delivery mechanisms (including intranets, the Internet, partner networks and mobile users).

To winnow, establish baseline requirements. Figure 2 shows one model for eliminating products, where the outermost ring represents a company's hardware compatibility and the innermost its meta-data management capability. For example, if it's mandatory that the product support your preferred hardware, any product that does not is quickly eliminated. Common criteria include:

• Hardware compatibility.

• Operating system compatibility.

• Support for certain delivery mechanisms.

• Support for native interfaces used to query and load data.

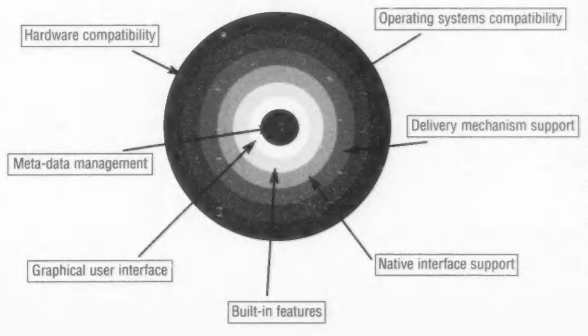
• Built-in support for transformational and cleansing functions.

• Graphical support for ad-hoc queries.

• The product's meta-data management capabilities.

You're now near the end of Phase 2. Next, you analyze each remaining vendor's financial stability and background. Then you perform rudimentary vendor and product evaluations to shrink the list to a maximum of six finalists.

**Figure 2** **Elimination Model**




### Conclusion

Once you've completed Phases 1 and 2, you are in a position to zero in on your final recommendation – which will be addressed in Part II. There, we will provide in-depth guidance on vendor and product evaluations; proof-of-concept activities; and reaching your final decision.

Part II also contains templates that will provide a comprehensive list of questions and techniques needed to perform these evaluation activities and reach the final recommendation.

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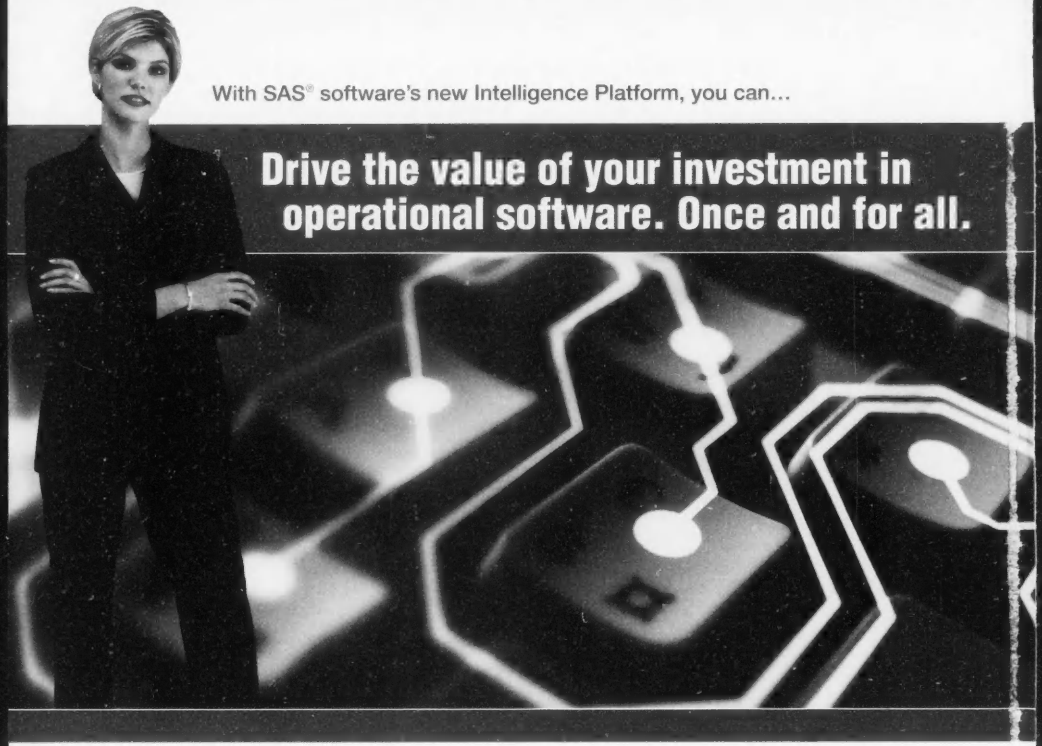

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site (*www.lad.army.mil*) to post letters, pictures and stories related to the troops' activities.

Indeed, if you're thinking this idea for IT deployment is too political for you and your company to be involved in, I urge you to take a look at the photos of the troops in the field. Such pictures help make the war in Iraq seem less remote and otherworldly for people who don't know someone serving overseas.

This isn't about politics or your views on U.S. foreign policy. This is about young men and women thousands of miles from home who are exposing themselves to possible death, injury and disease.

IT industry executives could easily put together a series of promotions offering online discounts to military personnel and their families. Sure, this is a bit prosaic, but dodging bullets and avoiding land mines is more important than sacrificing a small fraction of your profit margin.

The IT industry manages to come together over health care privacy and online security issues. There's no reason for it to duck and run for cover over the war in Iraq. **46300**

MICHAEL GARTENBERG

# Microsoft's Delay Is Your Gain

AT THE BEGINNING of this month, the press reported that Microsoft had set an internal deadline to ship the next version of its Windows client, code-named Longhorn, by mid-2006. That's later than the company had once indicated. But assuming that Microsoft is able to meet that deadline, IT departments have an unprecedented opportunity to get their houses in order. They can focus on the issues that matter most to users, such as stability, reliability and security, and prepare properly for the next wave of upgrades down the road. Here are three important things to tackle:

**Clean.** First things first, and that's cleaning house. It's time for all of those old 16-bit Windows (or DOS) applications to leave. They're a drag on systems, a nightmare to support and rife with stability and security problems.

**Organize.** A managed PC environment is much easier to support than an unmanaged one. Your administration tasks will become easier, your support costs will drop dramatically, and your change process for upgrades will allow smooth transitions when you're ready for them.

The key isn't so much creating a single desktop as it is focusing on the management aspects of your infrastructure to allow for updates, rollouts and other changes. There are a number of excellent products on the market to facilitate this, and likewise there's a litany of information available on how best to achieve this state. If you're not managing your architecture holistically, you're wasting cash.

**MICHAEL GARTENBERG** is vice president and research director for the Personal Technology & Access and Custom Research groups at Jupiter Research in New York. Contact him at mgartenberg2@optonline.net. His weblog and RSS feed are at *http://weblogs.jupiterresearch.com/analysts/gartenberg.*

**Upgrade.** This one's painful, but it's time to get off those older Windows operating systems, like 95, 98 and even 2000. You don't necessarily have to do this all at once, and a phased migration that gets you to Windows XP over the next several years as part of normal machine replacements will serve you well. Machines that are XP-capable should be upgraded. For them, focus your efforts on XP Service Pack 2 when it's released, to make sure you're getting the maximum benefit of XP along with the latest security fixes and enhancements.

Getting to XP also reduces pressure for short-term migrations to Longhorn in 2006. You'll have time to properly evaluate the benefits of the new operating system, you'll be able to give Microsoft the time it needs to get the kinks out, and you'll still deliver a compelling computing experience to your users.

Upgrading doesn't necessarily mean you stay with Windows, either. The next two years are a good time to evaluate where in your organization alternative operating systems might be appropriate. Although Linux still has a long way to go on the desktop, it's getting better and is appropriate under certain circumstances. Mac OS X is a reliable Unix-based alternative that can meet a number of business computing needs without creating an overly burdensome drain on support resources.

Meanwhile, look at new initiatives like the Tablet PC and focus on where such technologies can make an impact on your knowledge workers.

Every IT department faces two consistent challenges: to stay off the obituary pages and to every so often get in the headlines. The next two years present a huge opportunity for organizations to make some positive headlines and provide benefits for their users. Don't waste this time. **46227**

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# READERS' LETTERS

## Make Users Turn On What They Need

**IT'S ABOUT TIME** that Microsoft realized that all the extra features it has added present security concerns and that they should be turned off by default ["Microsoft Aims to Save Users From Themselves in XP Update," QuickLink 45555]. If 80% of users use only 20% of the features, then why is everything turned on by default?

Let users turn on the features they need. This would require Microsoft to clearly explain what each service actually does, something that would benefit everyone. I believe it's still too early to applaud Microsoft's efforts, but this a step in the right direction.

**Tom Hauer**
*IT manager, Hawthorne, N.J.*

## Get a Clue, Execs

**I COMPLETELY AGREE** with the premise of Maryfran Johnson's March 29 editorial, "No More IT Projects" [QuickLink 45747]. I spoke to the same subject in the Peer to Peer column in the Nov. 15, 2002, issue of *CIO*. The title I used was "It's Not Your IT Portfolio – It's Theirs." I can't understand how companies deal with IT organizations that aren't aligned.

Does anyone talk about sales, operations, legal or finance not being aligned? No, just IT. I'm convinced that the problem lies in the fact that senior management has no idea how to manage IT and thus allows them to march to their own drummer rather than incorporating them into the company strategy. I think that as money has become tight, this issue has become more serious.

**Paul M. Ingevaldson**
*Senior vice president, international and technology, Ace Hardware Corp., Oak Brook, Ill., inge@acehardware.com*

## The Data Toaster

**DAVID MOSCHELLA** has a different vision of what will happen in software than I hold ["Two Paths for the Future of Computing," QuickLink 45170]. This is probably because we have very different requirements. The requirements that I foresee make the computer the equivalent of a data and communications "toaster." It will provide the average user with the ability to generate and maintain private personal records that will be immune from snooping by others, and it will provide secure communications. And it will rely on open-source software.

Moschella's assumption that insulating the user from the code precludes open-source is simply wrong. He says, "Effective businesses should use applications, not tinker with programs," but that has no relationship to the source of the software.

There is no more program tinkering required with open-source software than there is with proprietary software; in fact, I would argue that the existence of macros indicates that many business users find it necessary to tinker with proprietary software.

**Charles J. Lingo**
*Denham Springs, La.*

## Windows XP Is Too Fat to Be Attractive

**MICHAEL GARTENBERG** just doesn't get it ["Perfect Storm Brewing for Microsoft?" QuickLink 45641]. People aren't upgrading to Windows XP for three reasons:

1) It's a much fatter operating system and they can't afford the hardware.

2) For their purposes, there is no real benefit. (Remember, Windows, at its heart, is just a menuing system.)

3) Any upgrade raises compatibility issues, but this one more than most.

Some may also not appreciate the terms of the new license agreement.

What people really want is for Microsoft to make "Windows Lite" available in all countries for a more reasonable price than XP. This is a classic example of a company not listening to its customers.

**Rick Kershner**
*Webmaster, Portland, Ore.*

**COMPUTERWORLD** welcomes comments from its readers. Letters will be edited for brevity and clarity. They should be addressed to Jamie Eckle, letters editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 879-4843. E-mail: letters@computerworld.com. Include an address and phone number for immediate verification.

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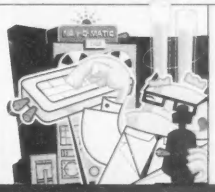
FUTURE WATCH

### Programming Matter

Techniques for "programming" matter are coming — albeit slowly. Once they arrive, these nanotechnologies will touch everything — and information systems will be the first thing to be affected. **Page 26**



SECURITY MANAGER'S JOURNAL

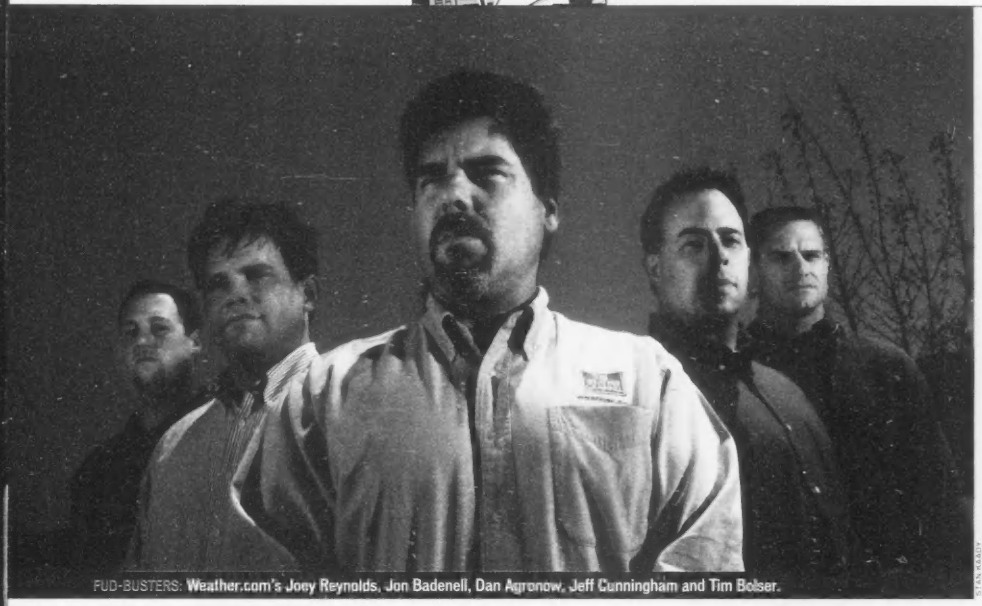
### Failure to Communicate Dooms IDS Alert Process

A SQL Slammer alert gets lost between the group that monitors the intrusion-detection system and the one that handles remediation in Mathias Thurman's shop. **Page 28**

OPINION

### Invest in an Antispam System Now

Curt A. Monash says antispam systems may not be perfect, but buying one will earn you the gratitude of users. **Page 29**



FUD-BUSTERS: Weather.com's Joey Reynolds, Jon Badenell, Dan Agronow, Jeff Cunningham and Tim Bolser.

STAN GRANT

# A Sunny Forecast For Open-Source

**Weather.com's move to an all-open-source Web site infrastructure has enabled the company to lower costs while meeting increased capacity demands. By Julia King**

**Weather.com**

OBJECTIVE: Lower costs and increase efficiency by migrating to open-source software and commodity hardware for its Web-based IT infrastructure wherever possible.

CHALLENGES: Dealing with initially skeptical executive management, rising to a vendor challenge that the project couldn't be done, testing and deploying open-source software at one of the world's 10 largest Web sites.

PAYOFF: Cut IT costs by one-third; increased Web site processing capacity by 30%.

FIELD REPORT

FOUR YEARS AGO, Weather.com, the online counterpart of The Weather Channel Interactive Inc.'s 24-hour TV channel, relied entirely on proprietary commercial software to serve up millions of Web pages of maps, forecasts and hour-by-hour weather data every day.

Today, the Atlanta-based Web site serves more than 50 million pages on stormy days, but it runs almost entirely on open-source software and commodity hardware. And since the move to the new architecture, it has slashed IT costs by one-third and increased Web site processing capacity by 30%.

"Where it makes sense, we will always look at open-source alternatives," says CIO Dan Agronow. The reason is simple, he says: Despite the self-serving air of fear, uncertainty and doubt (FUD) that commercial vendors create around open-source software, lots of open-source products work very well and can be deployed and run for about half the cost of commercial products.

Agronow recalls one time when an IBM sales representative warned him that he'd likely lose his job for dumping IBM's WebSphere application server and formal support program for an open-source alternative.

"We've heard a lot of the FUD about how you can't replace Netscape with Apache, or WebSphere with Tomcat [application server software], but when we've tried it, we haven't seen the gotchas that the vendors all tell us about," says Agronow, who worked at IBM as a technical project manager for 14 years before joining Weather.com.

"My experience is we have actually received better support of open-source software than we have with commercial software," he adds.

## The Linux Switch

But that's not to say there haven't been technical challenges. One of those surfaced in 2001 when Weather.com was still running WebSphere but decided for financial reasons to change operat-

ing systems, migrating from a Sun environment of Solaris running on Sun 420R servers to Linux running on IBM xServer 330 servers.

"We had problems like installation scripts not working or the GUI not connecting to do the proper administration. There were various things that were subtle differences between the platforms that hadn't been totally worked out on Linux," recalls Jon Badenell, Weather.com's chief architect. "Nothing was a showstopper, but it was not a turnkey installation either."

Working with IBM, Weather.com's 23-member team of systems administrators, developers and architects resolved all of the inconsistencies. In the process, they boosted both their confidence and skills as open-source experts. And Weather.com saved hundreds of thousands of dollars by moving off the Sun servers, Badenell says. "Literally, in some cases it was orders of magnitude cheaper to go to the Linux boxes," he says. "We replaced machines that were $500,000 with machines that were $50,000."

## Tomcat vs. WebSphere

Bolstered by its success with Linux on Intel-based machines, the IT team began looking for an open-source application server to replace WebSphere. Again, cutting costs was a major driver. Another was reducing the complexities and overhead associated with running the complex and feature-rich WebSphere.

The WebSphere servers were showing signs of strain and required repeated restarts as Weather.com's traffic load steadily increased, spiking to more than 18 million page views one day during a snowstorm in January 2002 [QuickLink 45818]

"Our Web site is big, and we get a huge number of hits, but we don't do a lot of complicated stuff. It's not transactional, and users are reading data, not submitting it, so we didn't use three quarters of what WebSphere actually offered," says Badenell. "There was an overhead penalty from just the size of the installation and the administration of it."

Weather.com's software developers also found WebSphere to be cumbersome and slow. As a work-around, they frequently developed applications using another tool and then ported them to the WebSphere application server.

"It was hard to run WebSphere and an IDE [integrated development environment] because of all the resources WebSphere took," recalls Jeff Cunningham, who leads the Internet application development team at Weather.com. "You had to run an instance of DB2 on your machine because WebSphere stored its configurations in DB2, so you had to have all that overhead. It was just really slow. I just started using Tomcat for development because it was so much faster."

There was also the issue of IBM's response. "There was kind of a gauntlet laid down," says Joey Reynolds, senior systems administrator-supervisor at Weather.com. IBM's WebSphere developers were familiar with Weather.com's software code because they had worked closely with the Web site's IT team to resolve earlier performance problems. "They said, 'We don't think you guys can do this, and you'll end up staying with WebSphere and paying support,' " says Reynolds. (IBM declined to comment for this story.)

But the development staff was undaunted."There are tremendously bright individuals here, and to challenge them to go that little extra bit is a dangerous thing if you want to keep their business," Reynolds says.

Moreover, Weather.com developers had been using Tomcat and therefore, says Reynolds, "we had already seen that the open-source community was adept at answering our questions. It wasn't like we were blind."

The development team considered several open-source application servers, Cunningham says, including Resin from Caucho Technology Inc. and offerings from Hewlett-Packard Co. and GemStone Systems Inc. "At one point, I had three or four on my machine," he recalls.

But a majority of team members preferred Tomcat, so the group decided to pilot-test the software with a new version of the Web site's local activity page, which dynamically serves up weather data for selected cities. For the test, the team had configured the servers to switch back and forth between WebSphere and Tomcat.

"When we rolled out that page, we discovered Tomcat was significantly faster," recalls Badenell. "Because that page is close to 60% of our total page views, it was at that point that we decided we would go ahead and make the switch over to Tomcat. We were holding our breath, and it worked out, and we haven't turned back since."

The switch to Tomcat software and Intel-based commodity servers also enables the Web site to add capacity quickly and relatively inexpensively. "In our architecture, which is very flat, scalability comes by buying more machines and throwing more Web servers on them. It's much more cost-justifiable to add 30% more capacity by buying 12 more machines," says Tim Bolser, director of application development. "We don't have to write a check to IBM [for WebSphere licensing fees], and it gives us a lot more flexibility in terms of deploying assets."

"On a typical day, we do 30 million database calls [to the Web site's main Oracle database] for just the desktop application," says Agronow. "We're able to handle that with Tomcat and open-source because the infrastructure gives us that capability. All of the servers are created generically, so we can scale horizontally. As our capacity increases because downloads of the desktop application are increasing, we just add another generic box, and that adds capacity."

All told, Weather.com has 75 pure Web site servers, 12 servers supporting its desktop products and 20 servers to support miscellaneous requirements. It also has dozens of development and test servers, bringing the total number of servers to about 180.

## The Support Factor

The site's software developers also are happy, says Bolser. "Part of what we like with open-source is you can look under the hood and see things," he says. "With commercial software, if there's a hole and it gets exposed, you're relying on the vendor to fix it, but if it's open-source, either the open-source community or you can plug the hole yourself. Because technical people are skeptical by nature, having more access to the code actually makes some people feel more comfortable and secure, rather than less."

Robin Bloor, an IT analyst at Baroudi Bloor in Arlington, Mass., says receiving a high level of support from open-source communities is typical, especially for what he calls "flagship" open-source products, such as Apache, Linux and Tomcat.

"The people who contribute to the creation of the product are an online community and continue to contribute to its support," Bloor says. "The person you talk to about support may even write a little piece of code for you for a very specific problem."

Looking ahead, Agronow says he wants to optimize the Tomcat software and Weather.com's overall server environment for Intel Corp.'s P4 processors. "If it was optimized, we'd get even better performance out of it. That's the one disappointment I have with Tomcat — it doesn't seem to be optimized for the latest generation of processors. And we want speed. Speed is what gives us performance and increases capacity," he says.

Weather.com is also working on swapping out its Oracle database for the open-source MySQL.

Agronow says the IT team has clearly demonstrated that open-source makes sense for Weather.com. "It saves us money, and every time we did [a migration] we got more confident about the next one," he says.

And that confidence extends beyond the IT staff, Agronow says. "Now when I talk to senior management about moving from Oracle to MySQL they don't ask me, 'Are you sure?' " he says. "They ask me, 'When?' " 46065

## Weather Report: A Migration Timeline

**MARCH 2000:** Weather.com deploys WebSphere 3.0.2 on Sun 420R Solaris servers as its Web site architecture.

**DECEMBER 2000:** Replaces Netscape Enterprise with Apache.

**JUNE 2001:** Migrates to WebSphere 3.5 running on Linux.

**JULY - DECEMBER 2001:** Migrates from Sun 420R servers to Intel-based IBM xServer 330s.

**JAN. 3, 2002:** Performance suffers as a winter storm draws 18 million page views.

**JANUARY 2002:** Developers begin using Tomcat Web application server software.

**JUNE 2002:** A new local activity page is launched; Tomcat replaces WebSphere.

**SEPTEMBER 2002:** The site accommodates 25 million page views when Hurricane Isadore hits.

**JANUARY 2004:** The Web site sustains 55 million page views without degradation during a major snowstorm.

**JANUARY 2004:** Migration from Oracle database to MySQL begins.

## PEOPLE DRIVE THE PROJECT

In-house expertise was key to the success of Weather.com's move to open-source systems:

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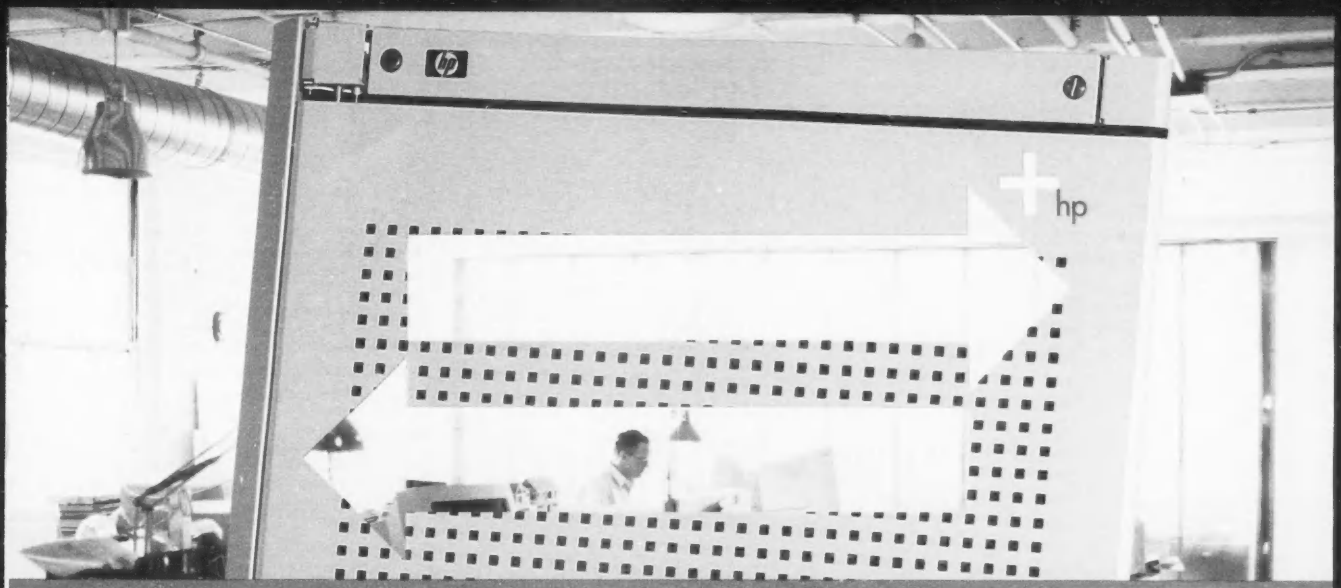


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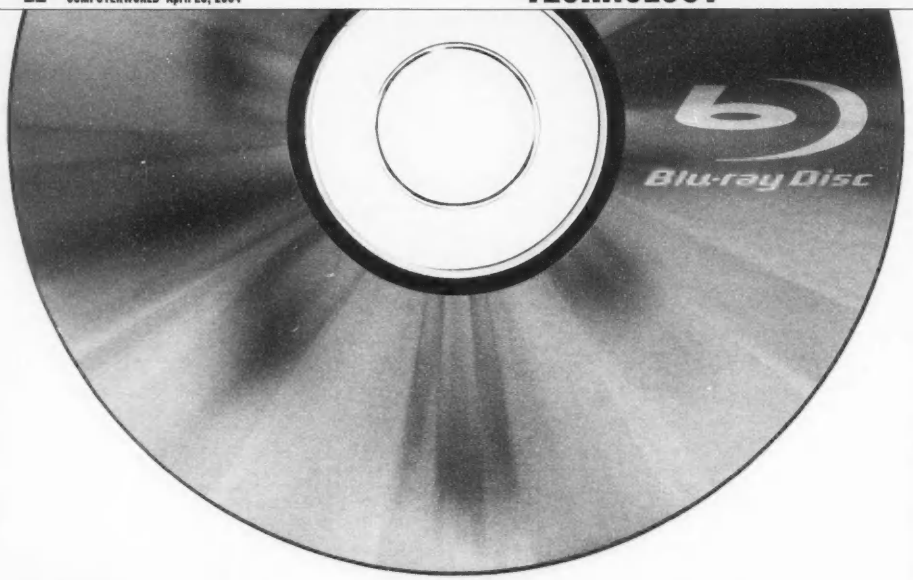



# Optical Storage Sings the Blues

EMERGING TECHNOLOGIES

Blue-laser technology will dramatically increase storage densities of optical media – and lower costs. **BY GARY H. ANTHES**

EVEN IT MANAGERS can get the blues. Or at least that's what a gaggle of vendors are hoping as they prepare ultradense optical storage products based on blue-laser technology.

Conventional optical technologies such as CD, DVD and magneto-optical (MO) drives write data using red lasers. But makers of storage systems and recording media are developing ways to read and write using more efficient blue lasers. Because these lasers operate at shorter optical wavelengths, they can write more data in the same space and write and read data faster than devices that use red lasers.

Sony Corp. led the way when a consortium it founded last fall announced Blu-ray, a technology that can write 25GB of data on a DVD-size disc (a standard DVD holds 4.7GB). And Cambridge, England-based Plasmon PLC is already shipping a first-generation blue-laser disc drive that boosts the capacity of a 5.25-in. optical disc from 9.1GB to 30GB. Plasmon says the price per gigabyte of its drive is 80% lower than the prices of products based on conventional red-laser MO technology.

## Competing Camps

Most of the buzz about blue-laser technology has focused on the consumer electronics market, where blue-laser discs are seen as a successor to DVDs. The devices could also be used for backing up desktop PCs or archiving audio, video and image files.

Two industry groups are promoting incompatible formats: Blu-ray Disc Founders, a consortium of Japanese companies led by Sony and recently joined by Hewlett-Packard Co. and Dell Inc.; and the DVD Forum, led by Toshiba Corp. and NEC Corp.

The high-definition DVD (HD-DVD) standard promoted by the DVD Forum is an extension of red-laser technology that uses the same disc form as conventional DVDs. Designed to maintain backward compatibility with existing DVD media, it uses the same bonded-disc structure as the current red-laser DVD and sandwiches the recording layer between two 0.6mm-thick plastic layers. A single-layer read-only disc has a capacity of 15GB, and a dual-layer disc supports 30GB.

The Blu-ray standard represents a more radical departure from the existing DVD format. While the disc is the same size as a DVD, the recording layer sits on the surface of a 1.1mm substrate and is protected by a special coating. A single-layer BD-ROM, as the Blu-ray Disc Founders call it, will hold 25GB — 67% more than an HD-DVD — and a dual-layer disc will hold 50GB.

Mike Fidler, a senior vice president at Sony, says the company will have Blu-ray media in both write-once and rewritable formats by year's end and will ship a Blu-ray disc player by the end of 2005. Blu-ray in PCs will follow roughly the same schedule, he predicts. "HP and Dell look at this from both the entertainment and data-storage perspectives," he says.

## Disc Economics

The price of Blu-ray and HD-DVD drives and media will eventually come down to the levels of today's red-laser devices and media, analysts say, but users will see a much lower net cost per gigabyte of data stored. And that cost will continue to fall as storage densities increase. Today, however, Sony Blu-ray recorders, which are available only in Japan, sell for $2,700. Discs are $23 each.

It's not clear which format will ultimately prevail. HD-DVD has lower capacity but is less costly to manufacture because discs can be made using existing DVD production equipment. Blu-ray proponents counter that although their manufacturing processes must be changed more radically, it will be cheaper in the long run to make a Blu-ray disc than an HD-DVD.

Right now, PC users may want to place their bets with Blu-ray, since it's the only blue-laser format to be endorsed by major PC makers so far.

For storage administrators who care more about data archiving than about

downloading high-definition television footage, other blue-laser technologies are emerging. For years, companies in industries such as financial services, health care, insurance and publishing have chosen optical media for archiving because they're extremely reliable and long-lived. And because they can't be erased or rewritten, optical media meet the most stringent government requirements for records retention.

When it comes to enterprise storage, the amount of data stored on optical media will remain a tiny fraction of the amount stored on magnetic media for the foreseeable future, says Peter Gere, an analyst at Enterprise Storage Group Inc. in Milford, Mass. But he predicts that the cost advantage of blue-laser media will feed a surge in popularity for write-once, read-many optical storage in the wake of new regulations and recent litigation related to data archiving.

Plasmon's UDO drive

"IT managers are hypersensitive to the risks associated with poor records management, and optical storage is the poster child for long-term data retention," Gere says. "It may not be the fastest or the most cost-effective, but it is the best media right now in terms of ensuring long-term data retention." Plasmon's blue-laser Ultra Density Optical (UDO) technology "has really given optical a new life," he adds.

Optical storage is likely to remain somewhat more costly than other technologies, Gere says. "But you are paying not only for longevity, but also for something magnetic media can't provide, which is immutability," he adds.

## Archiving Applications

UDO drives and media represent another application of blue lasers, one designed specifically for professional data-archive applications. UDO systems use the same 5.25-in. disc format as conventional MO libraries, but they use blue lasers and can store 3.3 times more data than MO discs can. Plasmon calls UDO a successor to MO. However, UDO is all-optical, whereas MO discs support magnetic storage on one side and optical on the other.

Although developed and promoted by Plasmon, the UDO specification was formally published and adopted in January by Ecma International's TC31 Technical Committee. Ecma is an industry association based in Geneva.

Although Plasmon sells DVD drives and media, Dave DuPont, Plasmon's marketing vice president, says DVDs in red- or blue-laser formats will see very little corporate use because they're more fragile and less reliable than UDO. "We are finding customers are unhappy with DVD because because it was never really designed as a professional archival technology," he says. "All the people we talk to want to move away from DVD because the media is of uncertain quality."

Last month, Plasmon announced that HP will use UDO drives and media in StorageWorks optical libraries.

The 5.25-in. blue-laser format will gain popularity because of its cost advantages over red-laser MO discs, says DuPont. A new market is emerging as companies and government agencies demand a way to store surveillance-camera images for long periods of time, not just for a few days, as was common before the recent rise of terrorism, he says.

Digital Storage Solutions, an imaging systems reseller and service bureau in Brentwood, N.Y., scans documents for clients and archives the data to DVD or MO. Paul Greene, director of the company's storage division, says he'll migrate to UDO, probably this year.

"Traditionally, MO has been geared to professional archiving, and CD and DVD have been geared to consumer markets because the cost is so much lower than for MO," he says. "Now, with UDO, you get a much higher capacity per disc plus much higher reliability because it's a jacketed media."

Greene says a complete UDO system — including the library, media, magazines for handling the media, software and maintenance contract — will cost just slightly more than a DVD storage system. "You may pay 10% more upfront, but that's spread over the life of the system, and you get much more reliability and longevity," he says.

One of Greene's customers, a service bureau, put in two Plasmon UDO jukeboxes a month ago and has seen flawless performance so far, he says. The Plasmon units relace IBM jukeboxes based on 5.2GB MO discs. The service bureau's eight jukebox units filled quickly, and they have been expanded from 1.3TB each to 19TB each, Greene says. And, he adds, the customer gained about 30% in read and write speeds over MO.

Sony recently announced its own line of 5.25-in. blue-laser drives and media, called Professional Disc for Data (PDD), but Plasmon is the clear leader in this market, Gere says. HP and IBM use UDO in their storage systems, and Plasmon and HP have 94% of the optical library market. So far, only Sony supports PDD. "I'd say PDD is a niche product for those that are loyal Sony customers," says Gere. "I don't see any major systems vendors lining up to support PDD." 46062

TECH SPECS

### DVD Optical Disc

| | RED-LASER | BLUE-LASER | |
|---|---|---|---|
| | DVD | HD-DVD | BLU-RAY |
| **Capacity** * | 4.7GB | 20GB | 27GB |
| **Transfer rate** | 11 Mbit/sec. | 36 Mbit/sec. | 36 Mbit/sec. |
| **Availability** | Now | Early 2005 | Late 2005 |

SOURCE: BLU-RAY DISC FOUNDERS AND DVD FORUM * REWRITABLE FORMAT

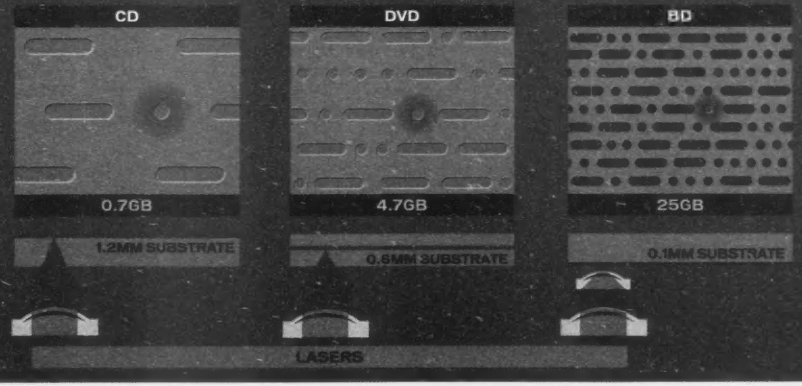
### 5.25-in. Optical Disc

| | RED-LASER | BLUE-LASER (100% OPTICAL) | |
|---|---|---|---|
| | MAGENTO-OPTICAL | PLASMON UDO | SONY PDD |
| **Capacity** | 9.1GB | 30GB | 23GB |
| **Transfer rate (read)** | 6MB/sec. | 8MB/sec. | 11MB/sec. |
| **Cost/GB (incl. library)** | $10 | $2 | NA |

SOURCE: PLASMON PLC, SONY CORP.

## Comparing CD, DVD and BD

Emerging blue-laser technology will increase storage density by a factor of five over traditional media. The photos below show how data is stored on a CD, a traditional DVD (center) and a Blu-ray disc (right). A competing standard, HD-DVD, can hold about four times as much data as today's DVDs.



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# PROGRAMMING MATTER

## Information systems will see the first applications.

By Patrick Thibodeau

PAUL HOWALT

**WHAT IS IT?** Molecules, atoms and subatomic particles that can be manipulated into memories, logic circuits and whole computers.

**WHAT'S THE BENEFIT?** Systems are tiny, ubiquitous and cheap, so they can be used to deliver drugs inside the body, for example, or to create a "smart" adaptable surface.

**HOW DOES IT WORK?** Electrochemical systems self-assemble and are programmed by the application of electrical charges.

TO REALLY understand the future, you have to suspend disbelief and imagine for a moment that software isn't just code on a screen; it's also matter. It's physical — as real as the chair you are sitting in. And it's programmable.

*Programmable matter*. It's a world that researchers such as Richard Minn, an electrical engineer at the National Institute of Standards and Technology, are building — one artificial atom at a time. An early beneficiary of this work could be information systems.

FUTURE WATCH

At a NIST lab in Boulder, Colo., Minn is using a quantum dot, also known as an artificial atom because of its capability to hold an electron in place. In this case, the electron is placed around a positively charged particle. They combine, annihilate each other and emit a photon, the smallest pulse of light.

It's a process that can be controlled to create a "photon on demand," or something akin to a binary on/off switch. This ability to control the release of photons could have applications in an area of computer security called quantum cryptography. The government is interested in it because the use of photons encoded in "quantum states" to communicate between a sender and receiver is "unconditionally secure." If there is any eavesdropping or interception of the message, the transmission will be altered, which ensures detection.

NIST, as well as researchers in corporate and academic labs, are working with atoms and subatomic particles, the building blocks of all matter, to develop quantum cryptography and other technologies.

In short, the software itself is the material structure: It is the configuration of the molecules, atoms and electrons. Change their fundamental properties, and the software is changed.

"In order to program at this level, you have to move the matter — there is just no way around it," says James C. Ellenbogen, senior principal scientist at Mitre Corp.'s Nanosystems Group in McLean, Va. For Ellenbogen, this is "matter as software."

Making something work at nanoscales pushes current technology to its limits and beyond. Chemists have long known how to synthesize chemicals at an atomic level, but combining chemicals alone doesn't make a computer.

"Our strategy has been to make some very simple chemical systems that self-assemble and then essentially electrically download complexity into those afterward," says Philip Keukes, a senior computing architect in quantum science at Hewlett-Packard Co.

HP has developed a nanoscale, molecular-based programmable device. To get an idea of what it looks like, imagine a sandwich. One layer is wiring that is approximately 40 nm across — a nanometer is one-billionth of a meter — going north and south. The peanut butter in this sandwich is a layer of chemically created molecules, and then another layer of wires crosses east and west.

This creates an electrochemical cell, which can be programmed by applying electrical charges. That opens and closes switches in the chemical substrate in a process similar to what goes on in dynamic RAM. In the next two years, HP hopes to develop 18Kbit memory with this process, Keukes says.

These memories will go into systems of incredibly small size — so tiny that they can be embedded in a piece of paper, used to deliver drugs inside the body and included in everyday objects such as a child's crib to detect, for instance, a baby in distress.

### Smart Matter

These systems are also called "smart matter" because they have some computational capability and can be programmed to change shape. Dolphins, for instance, can swim very quickly because they are able to change the microstructure of their skin as water flows by it. Similar technologies could be developed for airplane and ship surfaces to respond to environmental changes using smart matter that's programmed to change shape, say researchers.

Creating such technology involves vast research across many institutions. At Palo Alto Research Center Inc. (PARC), work is under way to get smart matter to behave in a distributed way, in much the same way cells in a body interact.

"We're still trying to catch up with evolution, biological systems," says Dave Biegelsen, a research fellow at PARC who is focusing on principles for getting smart-matter devices to communicate and compute together.

Step further into the future and you enter a world envisioned by Wil McCarthy, chief technology officer of Galileo Shipyards LLC, an aerospace research facility in Lakewood, Colo., and author of *Hacking Matter* (Basic Books, 2004).

In McCarthy's view, having the ability to literally program matter creates an entirely new technology paradigm. Imagine the house of the future: Instead of windows consigned to a fixed location, the owner can move them around by changing different parts of the house from opaque to transparent.

This house would include large arrays of programmable dots in material that conducts electricity, much like silicon-based material does today. But with programmable quantum dots, McCarthy says, you can create metal traces inside a solid object, create an electric circuit to perform a particular task and then erase it once it's complete.

But major research hurdles exist. For instance, while researchers are starting to produce some nanoscale components, getting those components to interact with existing applications and silicon-based systems remains a major challenge, says Howard Davidson, a distinguished engineer at Sun Microsystems Inc.'s laboratories. Researchers are making progress, but Davidson believes the first complete nanocomputers that can connect to traditional applications or systems are 20 years off. Regarding the world McCarthy envisions, where matter can be changed in almost anything, Davidson says he believes the technology problems may be insurmountable.

**46099**

### MATTER AS SOFTWARE

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| 8:15am to 8:45am | **Off to See the Data Wizard: Reporting from the Yellow Brick Road**<br>Maryfran Johnson, Editor in Chief, Computerworld |
| 8:45am to 9:15am | **User Case Study** |
| 9:15am to 9:45am | **Business Intelligence in Action at NASD**<br>Martin Colburn, EVP and CTO, National Association of Securities Dealers |
| 9:45am to 10:15am | Refreshment and Networking Break |
| 10:15am to 10:45am | **Evolving the Enterprise: Leveraging Information for Competitive Gain**<br>Jim Davis, SVP, SAS |
| 10:45am to 11:15am | **Industry Analyst Perspective:**<br>**The IT Bottom Line: Proving the Value Delivered**<br>Rebecca Wetterman, Research Director, Nucleus Research |
| 11:15am to noon | **Panel Discussion:**<br>**Creating the Transparent Organization: New Roles for Business Intelligence with Corporate Customers, Suppliers and Government Regulators**<br>Moderator: Julia King, National Correspondent, Computerworld<br>Panelists: Dennis Callahan, EVP & CIO, Guardian Life Insurance; Maureen Glynn, Director, IT Risk & Compliance Management, Intel |
| Noon | Program Concludes |

### Chicago • June 9, 2004

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| | |
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| 8:15am to 8:45am | **Off to See the Data Wizard: Reporting from the Yellow Brick Road**<br>Maryfran Johnson, Editor in Chief, Computerworld |
| 8:45am to 9:15am | **User Case Study** |
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| Noon | Program Concludes |

**Selected speakers include:**

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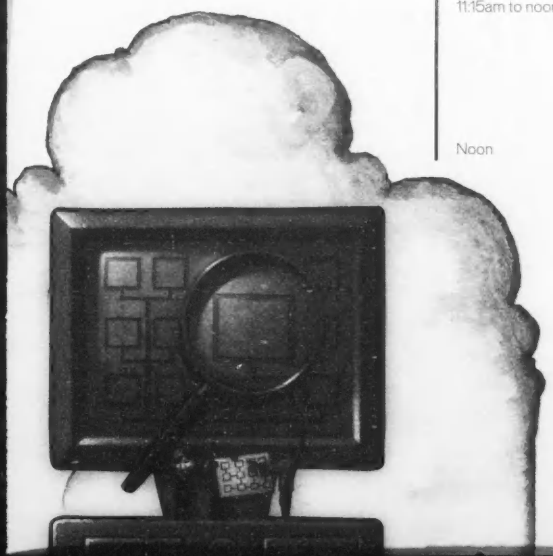
*Editor in Chief*
*Computerworld*

*Martin Colburn*
*EVP and CTO*
*National Association of Securities Dealers*

*Jim Davis*
*SVP*
*SAS*

*William Farrow*
*CIO and EVP*
*Chicago Board of Trade*

*Julia King*
*National Correspondent*
*Computerworld*



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# Failure to Communicate Dooms IDS Alert Process

## An early warning goes unheeded, SQL Slammer worms its way in, and all hell breaks loose. By Mathias Thurman

SECURITY MANAGER'S JOURNAL

OUR INTRUSION-detection system consists mostly of PCs that act as network sensors by running Snort open-source software. The IDS worked very well in giving us an early warning of an impending SQL Slammer attack a few weeks ago. But communication between my group and the operations group broke down, turning what should have been a minor issue into a major problem. Now management is talking about merging remediation responsibilities into my small group — something we're not prepared to handle.

We have more than 25 IDS sensors across our network worldwide, and we can see about 90% of the company's internal network traffic. The remaining 10% comes from our engineering labs and remote sales offices, which we plan to monitor as soon as we can get the resources.

Our IDS gives us a unique view into our network. We're the only IT organization in the company that can see *all* traffic as it enters and leaves the network and examine it at the packet level. With this comprehensive view, it's not surprising that we were the first to observe initial SQL Slammer activity.

The Slammer worm entered our network via an unpatched server in one of our engineering labs. The person monitoring the IDS noticed outbound traffic consistent with SQL Slammer at about 7:30 one morning and traced it back to a lab server. The staffer sent an e-mail that included details on the suspected traffic and followed up with a phone call and a voice-mail message.

The operations group gets so many e-mails that if you don't let it know you've sent something important, the message might get missed. That's exactly what happened this time. The e-mail alert wasn't read, and our voice message wasn't retrieved in time to block the attack. A few hours later, we found ourselves dealing with a massive number of reports of network and server problems.

### The Repercussions

Although the SQL Slammer worm was initially released in January 2003, variations of it continue to float around the Internet. Meanwhile, people at my company are still deploying new servers, especially in lab environments, without the proper patches and service packs installed. That leaves us vulnerable to Slammer and many other exploits.

The consequences have been costly. During this latest incident, we had to configure access-control lists on key routers in order to mitigate the attack, which required the services of 15 to 20 people for many hours. If the machines had been patched, there might not have been an incident at all.

> **Now management is talking about merging remediation responsibilities into my small group – something we're not prepared to handle.**

But even with the machines unpatched, better communication and a more timely response to our initial warning would have kept the problem from escalating.

My team and I are trying to address the lab vulnerability. Since we have limited control over how the lab builds servers, we're in the process of deploying a device between the lab and corporate network segments that will offer URL filtering, virus scanning and some firewall protection.

We also plan to address the communication and reporting problem by deploying a data-correlation tool to send alerts to a more manageable console, instead of through unreliable e-mails.

### Surprise Solution

We weren't the only ones coming up with solutions, however. After we regained control of the situation, the IT security group received an e-mail from a high-level manager suggesting that we be the central point of contact for all virus-related activity and that we should be responsible for managing and creating all incident reports for viruses.

This made sense, he argued, since my team has consistently been the first responder whenever malicious code has appeared on our networks.

While we were grateful for the recognition, the manager's e-mail was also of concern to us and the cause of much discussion. On one hand, we're in the best position to detect malicious activity within the network, and we can provide the most meaningful information on issues ranging from viruses to hacking activity. But we don't feel that our small group should be responsible for managing every virus once it has been detected.

We should handle some incidents. For example, if we're presented with information indicating that someone has purposefully introduced malicious code into our network or written a virus, that would be different. But with some guidance from the security group, the desktop-support group has traditionally handled viruses very well.

Given our staff size and abilities, our group should be used as a resource for detecting problems. But remediation should continue to be handled by other groups. Because of our limited resources, managing virus problems would consume most of our time and hurt our ability to attend to other security-related matters. This is also a politically hot turf issue. We need to respond very carefully, so as not to alienate our peers in the other IT operations groups.

We're hoping to come up with a combination of training and tools so we can offload as many operational security tasks as possible to these other groups. Then we can stay focused on what we do best: IT security engineering, architecture and consulting. ◗

### WHAT DO YOU THINK?

This week's journal is written by a real security manager, "Mathias Thurman," whose name and employer have been disguised for obvious reasons. Contact him at mathias_thurman@yahoo.com, or join the discussion in our forum. **QuickLink a1590**

To find a complete archive of our Security Manager's Journals, go online to **computerworld.com/secjournal**

## SECURITY LOG

### Security Bookshelf

■ ***Designing Network Security, Second Edition,*** **by Merike Kaeo; Cisco Press, 2003.**

**At first glance, this book appears to focus on Cisco products. Indeed, many of the diagrams are typical of what you'd see in a Cisco shop, but the first eight chapters offer very useful and non-vendor-specific security best practices. The other chapters are Cisco-centric, however, and focus on vendor-specific device configurations and implementation examples.**

**This edition also covers public-key infrastructure and wireless. It even has information on 802.1x switch-port authentication, which I found interesting because my company is considering implementing this new technology. I'd recommend this book not only for Cisco shops but also as a general reference.**

***– Mathias Thurman***

### Web Services Standard Approved

**The Organization for the Advancement of Structured Information Standards has ratified the Web Services Security standard. WSS 1.0 specifies a series of Simple Object Access Protocol extensions designed to secure the confidentiality and integrity of Web services messages.**

### Task Force Issues Security Guidelines

**IT vendors should improve default security settings in their products, a committee of the National Cyber Security Partnership Task Force said in a report on technical standards. The group has asked vendors to provide stronger "out-of-the-box" security configurations and to support at least one configuration profile that provides a baseline security level. The report is available at *www.cyberpartnership.org/TF4TechReport.pdf*.**

## BRIEFS

### Microsoft Previews SP1 for OneNote

Microsoft Corp. last week announced a preview release of its Office OneNote 2003 Service Pack 1. SP1 contains technical updates and enhanced features such as the ability to copy notes from a Pocket PC into OneNote, increased integration with Office 2003 and the ability to password-protect notes, according to the company. Microsoft said the service pack is based on customer feedback. The preview can be downloaded at *www.microsoft.com/office/onenote/SP1*. The final release of SP1 is due later this year.

### Workshare Updates Content Software

Workshare Technology in London has announced Version 3.5 of its Workshare 3 content change software. Workgroups that use Microsoft Word and e-mail to create and share business documents can now use Version 3.5 to manage suggested changes from multiple users, according to the company. The new version of Workshare is available for $300 per user for a perpetual license.

### D-Link Offers WLAN Video Input

D-Link Corp. in Taipei, Taiwan, has announced its Wireless Presentation Gateway, an adapted wireless LAN access point that serves as an input device for multimedia projectors or LCD flat-panel screens. The Gateway hooks up to a projector through a standard VGA connector and receives and displays images from any 802.11b/g-equipped computer within a range of 100 to 200 feet, according to D-Link. The device supports resolution settings up to 1,024 by 758 pixels and up to 24-bit color depth. The Gateway includes software that allows multiple presenters one-click access to a projector. The product is available now for a suggested retail price of $299.

CURT A. MONASH

# Invest in an Antispam System Now

IN-BOXES ARE CLUTTERED with mounds of spam, and companies such as Brightmail, CipherTrust and Postini are offering products to clean up the dreck. None of them will completely rid your users' systems of unwanted e-mail, but if you aren't already running up-to-date antispam technology in your company, get some immediately. It's among the best quick-payback, attaboy-producing purchases you can make.

CURT A. MONASH is a consultant in Acton, Mass. You can reach him at curtmonash@monash.com.

Antispam systems combine hard-core networking with linguistic analysis, machine learning and other near-AI techniques. Almost no buyer (or analyst) is conversant with all of those technical disciplines. Fortunately, most leading antispam vendors offer reliable products or services. Just make sure that the antispam system you choose boasts the following attributes:

**At least 90% effectiveness.** That is, the amount of spam that gets past your spam blocker — a.k.a. the false negatives — should be under 10%. Effectiveness levels above 98% are not unheard of, but figures of 93% to 95% seem to be more common. These rates should be achievable with little or no user "training" of the system.

**Minimal false positives.** The number of legitimate personal or business e-mails erroneously blocked as spam should be effectively zero. Otherwise, your users have to check spam quarantines for messages that might have gone astray. But if end users are even briefly checking every spammy e-mail, you've pretty much lost the benefit of antispam technology.

**The ability to obtain many sample spam messages quickly.** Without that raw data, vendors can't keep pace with the spammers.

**Prompt and easy updates of spam-filtering rules.** Ideally, such rules are updated at least hourly.

All decent spam-blocking systems filter spam according to a variety of spam-spotting rules. The best combine several approaches to filtering, such as the following:

- Blocking messages from specific senders. A lot of spam is sent from virus- or worm-infested machines that have been temporarily hijacked by spammers. These can often be identified and their mail blocked until the machines have been disinfected.

Filters also block mail from some Internet service providers that are known to be overly spam-friendly.

- Blocking specific spam campaigns. A serious antispam vendor has access to multiple sources of spam. It will often have a broad variety of dummy mailboxes that can be found by spammers but receive no legitimate e-mail. Thus, anything sent to those mailboxes is known to be spam. If spam gets past a blocker, customers can forward it to the vendor to help them block it the next time.

Once a message has been identified as spam, a rule can be created to block other copies of that spam. At least, that's the ideal. Spammers randomize almost every aspect of their messages, making it very difficult to know whether two spams are the same.

However, there's one thing spammers usually can't randomize: the call to action. For example, if the spammer wants you to click on a URL, that address is likely to be found in all — or at least many — copies of the e-mail.

- Blocking messages that include common spam indicators. Messages about Viagra, body-part enlargement, work-at-home opportunities and so on are probably spam. So are messages about v!a-gra, wrk[ng at hmoe and the like. Indeed, some of the best indicators of spam are various techniques spammers use to obfuscate the text of their messages, such as deliberate misspellings, small fonts, white fonts, HTML comments and words within graphic images.

Not all serious antispam vendors use all of these techniques. For example, there's strong disagreement about whether campaign-specific filtering rules are needed. But it's certainly necessary to use a variety of rules in the antispam version of defense in depth.

For the most part, spammers are technically sophisticated criminals and could find a work-around to any particular rule or rule type at any time. Thus, effective antispam software has from 10,000 to 50,000 rules or more, which are combined to calculate an aggregate spam-indication score.

Challenge-response systems are an alternative to filtering as a spam-fighting strategy, but I suspect they'll never work. The idea here is that when you get an e-mail from an unknown sender, your software automatically sends a "challenge" e-mail back, which the sender then has to answer before you'll accept his first e-mail. A challenge-response system will always be prone to false positives, such as when mail comes from automated senders or from people who have their own challenge-response systems. Such a system could also annoy possible customers trying to contact you.

For the foreseeable future, you should rely on filter-based antispam systems, and you should install one now. U do-t'n haave to drrown ]n $paam anym-oore!

46312

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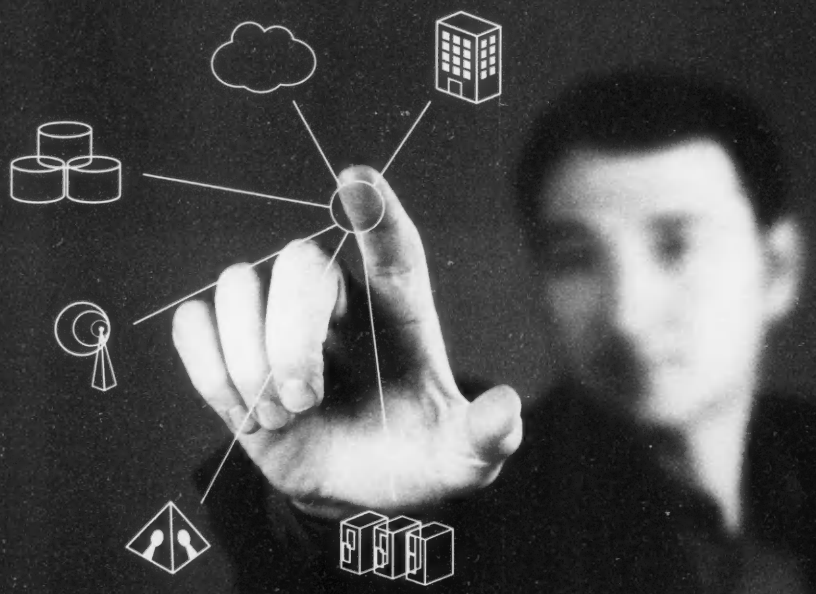

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Q&A
**Introverted Technologists**
Author and consultant Naomi Karten has advice for introverts who want their IT careers to prosper in an extroverted business world. The first step is to view introversion as a positive trait, not an affliction. **Page 34**

OPINION
**How to Make Better Decisions**
Stressed out? Sue Young explains how you can put yourself in a better frame of mind to make solid decisions and seize opportunities, even in the midst of IT chaos. **Page 37**

**Choosing the Best Side Roads**
CIOs disclose where and how professionals with cubicles in IT and executive aspirations can acquire the corporate and business knowledge they need to succeed. **Page 33**

BELLE MELLOR

# Reining In MAVERICK BUYERS

**'SPEND MANAGEMENT' SOFTWARE AND SERVICES CAN REGAIN CENTRALIZED CONTROL OVER COMPANY EXPENDITURES AND YIELD BIG SAVINGS.** BY CONNIE WINKLER

**THEY WEREN'T BAD GUYS.** The 18% of Kennametal Inc.'s employees who ordered PCs or paper clips locally, outside the purchasing office's control, thought they were doing the right thing. But these so-called maverick buyers were big spenders — too big.

"They weren't doing anything wrong but simply what they felt was the best way to source," says Jim Cebula, director of global purchasing and travel at the $1.8 billion Latrobe, Pa.-based tool maker, which has 50 manufacturing plants and 13,000 employees worldwide. Intentions aside, the mavericks needed reining in because they weren't getting the volume discounts and efficiencies that come from consolidating spending with preferred suppliers under negotiated contracts. Kennametal didn't know how much it was spending, or on what, or with whom.

So the company began streamlining purchasing operations, bringing in "spend management" tools and services from Ketera Technologies Inc. in Santa Clara, Calif. "The spend [analysis] allowed us to understand where we hadn't concentrated our spend in a given category . . . and who wasn't buying on contract," Cebula says.

Through gentle encouragement, Cebula now has 80% of employees buying off the nationwide office-supplies contract. And he can analyze purchases by category. For example, he could break out computer purchases and separate laptops from servers.

Kennametal experienced a 150% return on investment from its spend management effort in the first year, although Cebula acknowledges that will be hard to repeat. And instead of chasing lost invoices or maverick buyers, the company's purchasing staffers can now handle more value-added work, such as negotiating better prices or finding new suppliers.

In far too many companies, the traditional purchasing department handles only 20% to 25% of spending, with the rest handled by other departments, says Tahseen Ali, CEO of Verian Technologies Inc., a spend management software vendor in Charlotte, N.C. And the data about spending tends to be stored in various departmental silos, instead of being aggregated and properly managed.

The analytic portion of spend management software pulls expenditure data from financial and ERP systems and sorts it by category. (While it's possible to extract such financial data

**OUTRAGEOUS SUMS**

Spend management tools may help companies comply with the Sarbanes-Oxley Act, especially the coming requirement for companies to report significant events affecting their finances. For example, the software can help identify extraordinary expenditures such as, say, million-dollar artwork purchases for the CEO's New York town house.

"If you have a spend category of office furnishings [that's typically] $100,000 per month and suddenly it's $2.7 million, you need to understand exactly what happened in that category," says John Sharman, a global procurement expert with IBM's Business Consulting Services.

– *Connie Winkler*

from existing systems manually, that's a lengthy, costly and error-prone process.) With this aggregated data, companies can reduce the number of suppliers and payment methods, identify off-contract spending and generally consolidate contracts on a corporate (and sometimes global) level.

## Gaining Visibility

"Companies buy spend management or spend analytics to get visibility into what they're spending. The next step is to improve that process," says Michael Dominy, an analyst at The Yankee Group in Boston. Spend management is a subset of what Yankee Group calls "supplier relationship management," one of the fastest growing portions of IT budgets.

So why is spend management hot? "We're coming out of two to three years [of economic] downturn. Companies are looking for other areas to squeeze because if they can save $1 million, that goes right to the bottom line," says Michael Schmitt, chief marketing officer at e-procurement firm Ariba Inc. in Sunnyvale, Calif. These companies have already exhausted the quick-fix responses to the business downturn: cutting staff, selling off assets and reducing inventories.

At Vought Aircraft Industries Inc. in Dallas, maverick spending wasn't the only problem, although in one category, employees were purchasing from more than 25 sources when the company already had a preferred supplier. Even worse was that the maverick buyers were paying suppliers in different ways, including standing purchase orders, credit card, online procurement and ad hoc purchase orders.

Because of the different payment methods (tallied in different silos), Vought didn't realize how much it was actually spending with individual vendors, thus it missed out on discounts and wasted time, effort and money printing checks, transferring funds and accounting for all the purchases.

At Vought, the maverick buyers likely had reasons to be confused: The company had accumulated a hodgepodge of systems and processes from a variety of acquisitions and its mid-2000 divestiture from Northrop Grumman Corp.

"We were capturing tremendous amounts of data about purchasing, but we had a fractured view of this activity," recalls Pam Stewart, administrator of e-procurement at Vought. Prior to using the Ketera spending tool, "we never rolled everything together, so all of a sudden we qualified for greater discounts with suppliers," she says.

That was especially important because of hard times in the aerospace industry. "The financial aspect was important; we weren't interested in staffing up to do catalog creation and maintenance ourselves," Stewart adds.

Like Kennametal, Vought turned to the Web-based hosted service from Ketera, which creates and maintains the catalog of suppliers from which employees can purchase office, safety and janitorial supplies. Ketera handles all the updates and supplier links, while employees use an interface on their systems that resembles Amazon.com's.

About 200 of Vought's 6,000 employees have access to the Ketera system, including five in the purchasing department. "It's just not our culture to open the system up to everyone," Stewart says.

## Low-Hanging Fruit

Maintaining the savings from spend management is the challenge for Kendall Mills, group director of worldwide procurement at Cadence Design Systems Inc., a $1.1 billion provider of electronics/semiconductor design software and services in San Jose. Cadence shaved $6 million off all purchases — which went directly to the bottom line, Mills notes — in the first 18 months after installing a spending control suite from Softface Inc. in Walnut Creek, Calif. Softface was recently purchased by Ariba.

Prior to using the Softface product, procurement staffers manually extracted data from the SAP ERP system and poured it into spreadsheets. That process could take as long as three months just to track 50 commodities, and it was error-prone, Mills says.

"What helps is that we're now looking at 100% of our spend, not just certain key categories," Mills says. "On the contract compliance side, when we see spend going up, we head it off quickly." The software helped Cadence cut the number of suppliers it uses from 8,000 to 2,000, he says.

"We're still achieving savings regularly, but it's getting harder as all the low-hanging fruit is gone," Mills says.

## Working With IT

Companies typically consult their IT departments about their spend management plans, but the technology doesn't require heavy work from IT. "That these solutions can cut 20% off expenses and can be up and running within a matter of weeks and require very little involvement from your IT department . . . is compelling all the way up to the CEO," says Ian Sullivan, a vice president at Perfect Commerce Inc., a Lee's Summit, Mo.-based procurement network.

At Owens Corning, the e-sourcing group worked closely with IT, says James Hawkins, e-sourcing process leader. "Shoulder to shoulder, we went after the best tool for us, narrowing it to two vendors, one with a hosted solution and one without," he says. "Right now — and this will probably change in a couple of years — we prefer the hosted solution because it keeps the work off our IT team for upgrades and maintenance."

The Toledo, Ohio-based maker of building and composite materials, with an estimated $3 billion in annual expenditures, signed up for the expense management service of Emptoris Inc. in Burlington, Mass. So far, Owens Corning is happy with the savings and expects the investment to pay off in the first year.

Some users want to expand spend management into more complex areas, such as managing contracts and benchmarking against other organizations. For example, Perfect Commerce has a procurement network that allows participants to compare price ranges to make sure they aren't overpaying.

"With our Open Supplier Network, which processed $3 billion in transactions in 2003, we have the ability to analyze transactions and provide that data to organizations," says Sullivan. "We can say, 'For the commodities you're buying, here's the range of what others on the network are paying for like goods and services.' "

## Catalog Perils

Of course, opening up all these online shopping catalogs to "nonprofessional" purchasers (who may decide to redecorate their offices, for example) has potential perils. Organizations need policies to monitor spending as well as promote efficiency in transactions.

"The Internet makes spending money very easy if you have a catalog," says John Sharman, a global procurement expert with IBM's Business Consulting Services. "All of sudden, you see this world of things that you [as] an individual could be spending money on — it doesn't matter if you're in a cubicle or home office."

Finally, there's the pricey-pen danger: "If you're historically getting 10% to 20% off list price for office supplies, and you aggregate your spend to a single supplier to get 40% off, that doesn't necessarily mean you're doing a better job managing office supplies," warns Sharman. "It could be that you were getting 20% off Bic pens, and now you've negotiated a contract to get 40% off Mont Blanc pens. In the real world, these things can occur."

**46087**

*Winkler writes about management technology from Seattle. She can be reached at winklerconnie@yahoo.com.*

### ARIBA'S UPGRADE

Ariba recently upgraded its spend management applications to help companies monitor expenses for corporate services, such as legal help, travel and marketing. Best Buy Co. is even using the software to manage snow removal:

**QuickLink 38318**
**www.computerworld.com**

## THE PLAYERS

**Vendors of spend management tools fall into these broad categories:**

**Hosted service providers,** such as Ketera Technologies and Emptoris

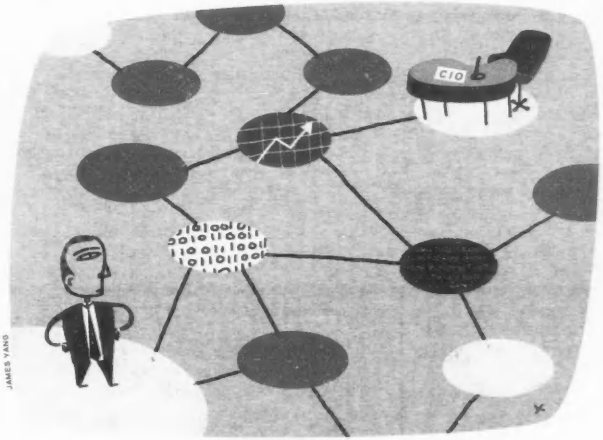
**E-procurement vendors,** such as Ariba and Perfect Commerce

**ERP software vendors,** such as SAP AG and PeopleSoft Inc.

**General spend management software vendors,** such as Verian Technologies, Zycus Inc. and Softface

**Software vendors that focus on specific expenses,** such as professional services, telephone bills, contract labor or support services. For example, seeUthere.com Inc. specializes in managing the cost of company meetings.

**Costs:** Vendors say that the software, when hosted by a service provider, costs about $100,000 per year, whereas multiyear software licenses and projects can run from $200,000 to $700,000.




JAMES YANG

CHOOSING THE BEST

# Side Roads

## ( The shortest route to the top of IT is often horizontal. By Julia King )

JEFF CAMPBELL was promoted to CIO at The Burlington Northern and Santa Fe Railway Co. (BNSF) 16 months ago, after masterminding a complete overhaul of the $9 billion transportation company's global procurement and sourcing operation.

Temple University's Tim O'Rourke spent more than a decade as the university's comptroller before his promotion to vice president for computer and information services.

As IT comes to permeate virtually every nook and cranny of large enterprises, top IT executives are moving into their leadership roles from other parts of the business, notably finance and operations. For organizations with annual revenue exceeding $1 billion, company knowledge is the most important CIO selection criterion, according to research conducted jointly in 2003 by Computer Sciences Corp. and Financial Executives International, a professional association.

Even CIOs who rose through the ranks from within IT point to an indisputable need for much deeper business and company knowledge. The reason: "There's no point in automating something you don't understand," says Kim Perdikou, CIO at Juniper Networks Inc. in Mountain View, Calif. "Before you get to any technology solution, you have to fully understand the business process."

Financial acumen and razor-sharp negotiating and contracting skills also are critical, especially as companies opt to buy more and more IT services from outside providers, says Campbell.

"I firmly believe that future IT leaders will be well-respected, well-grounded businesspeople who happen to have a second discipline called technology," he says. "We have to migrate from being doers to leaders of doers."

### Acquiring Executive Expertise

So, where and how can IT professionals with executive aspirations acquire the necessary skills and knowledge from their cubicles in IT?

At Fort Worth, Texas-based BNSF, Campbell has launched a formal business-skills training program, and each one of the company's 600 IT professionals will go through it over the next two to three years.

> "Before you get to any technology solution, you have to fully understand the business process."
>
> Kim Perdikou, CIO, Juniper Networks Inc.

"It includes intensive training in sourcing and sourcing policy, support and contract management, and governance practices," he explains. Negotiation training and "extensive immersion in finances, including understanding the time value of money, net present value and how and why to invest in one project versus another" are all part of the training, Campbell says.

Once trained, the IT workers will be assigned to one of the company's business units for 12 to 18 months. "We think they'll return to us much more effective technologists, and I do believe it's from here that our future IT leaders will come," he says.

Dan Sheehan, CIO at Advo Inc. in Windsor, Conn., is primarily using IT employees to staff a new 35-person "business competency center" at the $1 billion direct-mail company. People who work in the center hold the title of business technologist. "Project management types and systems analysts are the best candidates" from IT to move into the center, which also includes staff from all of the other departments, Sheehan says. The idea, he adds, is to create a single support entity that has an integrated view of the entire business and a clear understanding of how various departments and processes interact. The business technologists who work there certainly have technical knowledge, Sheehan says, "but their first allegiance has to be to the business, not to technology. You can't be a gadget or hardware fanatic."

### Cross-training Opportunities

- ERP projects
- CRM projects
- Business process re-engineering projects
- IT liaison positions
- Business-unit rotation programs

CIOs say that volunteering to work on customer-facing IT projects is another good way for IT professionals to gain broader business knowledge.

"Look for projects where there's strong business involvement. Look at who is on the project team. Look also for IT projects that touch end users, which include any of the larger projects tied around finance and HR," advises Accenture Ltd. CIO Frank Modruson. Steer clear of initiatives that fall into the "technology for technology's sake" category, such as server consolidation projects, he says.

ERP projects also are fertile ground for gaining business knowledge, says Harry Roberts, CIO at Boscov's Department Store LLC in Reading, Pa. But more than anything else, Roberts says, rotating out of a strict IT role is probably the most direct route to broadening your knowledge of your company and its business. At Boscov's, for example, a former manager of point-of-sale systems became an assistant to one of the retailer's store managers.

"If he had decided to stay in IT, he wouldn't have the appreciation he has now for merchandising in stores and the overall organization," Roberts says. "You've got to look for opportunities."

45736

# Introverted Technologists

## How to survive in an extroverted world.

*Surveys show that about 75% of people consider themselves extroverts, but anecdotal evidence indicates that the majority of IT folks are introverts, struggling to deal with their extroverted peers, business partners and customers.* **Naomi Karten,** *a consultant, author of* Communication Gaps and How to Close Them *(Dorset House, 2003) and a self-described introvert, is currently working on a book to help IT introverts use the trait to their advantage. She talked with — and e-mailed —* Computerworld*'s Kathleen Melymuka about how IT introverts can prosper in an extroverted world. She welcomes feedback at naomi@nkarten.com.*

**Most people think of introverts as shy people. What's your definition?** As described by personality instruments such as the Myers-Briggs Type Indicator, introversion and extroversion concern where we get our energy. Extroverts get their energy from interaction with the outer world. Introverts are inwardly focused. We process our thoughts and feelings internally and have active inner lives. But outwardly, we tend to be reflective and reserved — though we can talk at length about topics of interest. Introverts generally like working alone, prefer conversations one-on-one or in small groups and favor written to spoken communication. Although we may enjoy occasional parties, reading a good book often seems more appealing. Extended interaction with others — even just listening — can zap our energy, and we need lots of "cave time" to recharge, especially after a hectic workday.

**Why a book on introverts in IT?** IT is one of several fields with a much higher percentage of introverts than in the general population, while extroverts are represented in much greater numbers among IT customers. Numerous IT professionals have asked me for advice about how to succeed as introverts in an extroverted world. My goal is to help them recognize the strengths they have, the skills they can develop and the confidence and know-how they can acquire so they can advance in their careers. I also want to help introverts and extroverts appreciate each other's strengths and avoid common misconceptions.

**If I'm an introvert, how might that manifest itself in the IT workplace?** Most IT introverts are happiest when left alone to do their jobs. As a result, some don't adequately seek input from others, and some spend less time with customers, colleagues and team members than they should. Some IT introverts feel overpowered by colleagues who seem to so effortlessly speak out, offer opinions and contribute ideas without needing time to reflect.

**What are some challenges an IT introvert is likely to face when working with extroverted business people?** Extroverts tend to be enthusiastic and animated — wonderful qualities that many introverts enjoy, up to a point. But with effusive business people, some introverts have difficulty inserting themselves into the discussion. Because extroverts work out ideas as they speak, it's easy to confuse an idea in progress for a conclusion, which can be a potential problem during information-gathering and requirements-identification sessions.

**Do extroverts understand what's going on with introverts, or do they misinterpret introversion as something more sinister?** Once, back when I was a programmer, I heard that an extroverted colleague thought I was a snob. Why? I had walked past him without greeting him. Actually, as is often the case, I was wrapped up in my thoughts and hadn't even noticed him. Similarly, extroverts sometimes view some of their introverted colleagues as aloof, unapproachable and unfriendly — and, at times, as uncooperative, unconcerned and uninvolved.

**It sounds like the deck is stacked against introverts.** Some IT introverts have told me they feel drowned out by their more talkative colleagues, especially in meetings. Others have asked me if they're making a mistake in aspiring to management. A few have even asked if there's something wrong with them. Yet introversion is perfectly normal, and none of the challenges it poses are insurmountable impediments to a successful IT career. These people must resist seeing themselves as victims; an "I'm an introvert, woe is me" attitude is a self-fulfilling prophecy.

**How can I succeed in IT despite my introversion?** Start by thinking of it as succeeding *because* of your introversion. In many ways, introversion can be a strength.

**OK, then, what are some of the strengths introverts bring to an IT environment?** Many introverts are persistent, patient, highly analytical and excellent listeners. Though they may be reserved, many introverts are highly articulate. Some IT introverts excel at gaining support for their ideas by doing so one person at a time. And their calm demeanor can help steer a team through the pressures and challenges that IT organizations routinely face.

Developing pertinent skills will add to existing strengths. For example, acquire persuasion skills to help sell your proposals and recommendations. Gain relationship-building savvy so you can comfortably build rapport and forge connections. And — gulp-inducing though it may be — develop presentation skills, and seek opportunities to speak at company and industry meetings. Skills such as these develop competence, convey self-confidence, build credibility and open doors. One other thought: Small adjustments in behavior can prevent the negative perceptions that saddle some introverts. Sometimes, just smiling more can help.

**45739**

## Getting Heard

### Feeling drowned out by your extroverted peers? Author Naomi Karten offers these survival tips:

- **BE OPEN** about what you need. Explain to your more extroverted colleagues that when new ideas emerge, you'd like time to reflect on them before commenting.
- **BE RECEPTIVE** to extroverts' needs. Encourage them to do the talking that enables them to reach an understanding of an issue.
- **USE ONE-ON-ONES** to your advantage. Spending time alone with decision-makers gives you a chance to deepen your relationship and present your ideas.
- **INTRODUCE TECHNIQUES** that can help you during group interactions, such as time-outs during brainstorming sessions or ground rules to ensure that everyone has a say.
- **COLLABORATE WITH COLLEAGUES** to determine how you'll support one another so you can all do your best work, whether you're introverted or extroverted.
- **LEARN TO WRITE** clearly and compellingly, and use your writing power to advance your ideas.
- **HAVE FUN** with your differences. Karten teases her extroverted colleagues about competing for the gold in the yap-athon. They kid her about not knowing which end of the phone to talk into.

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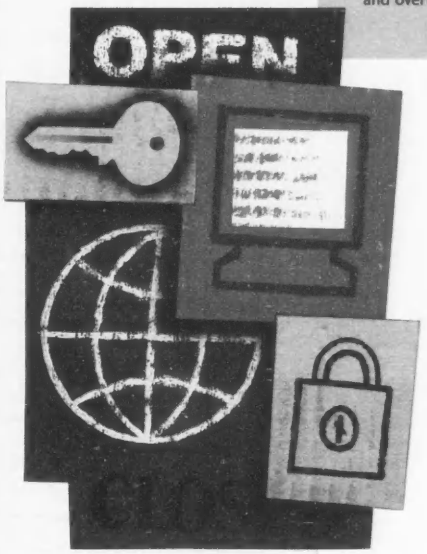


NetworkWorld EVENTS

# Enterprise Security:

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**EVENT SCHEDULE**

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# Career Watch

ASK AN IT LEADER

## Joseph Cleveland

Title: CIO

Company: Lockheed Martin Corp., Orlando

Cleveland is one of *Computerworld*'s Premier 100 IT Leaders. Here he answers readers' questions about career growth and skills development. If you have a question to ask one of our Premier 100 IT Leaders, send it to askaleader@computerworld.com and watch for this column each month online and in print.

**What do you see as the top five IT careers for the next five to 10 years?** Certainly one area with a fast-growing demand is security. Analysts with systems security training and knowledge are becoming sought after in high numbers. Nationally, the number of jobs for workers in this group is expected to grow much faster than average through the year 2010. According to the University of Oregon and the Indiana Career and Postsecondary Advancement Center, an increase in computer security jobs is expected as technology continues to advance and become more affordable. More businesses will add computers and will need specialists to make their networks secure. In addition, use of the Internet by businesses should increase the demand for computer security specialists.

With the volume of sensitive data generated every second growing rapidly, data integrity, backup systems and database security have become increasingly important aspects of the job of database administrators.

**Most of my experience in development has been for a committed IBM shop. I've been active in growing my skills. If I want to do something different in the near future (.Net, for example), what are some steps to take that will help me make that break from the past?** Networking is a vital asset to career growth. Even if you don't think you already have a network, you probably do when you consider associates, friends and family. You can broaden your network through joining professional organizations in your new field and contacting alumni from your college who are working in the field you want to enter. Affinity groups within your company as well as established career organizations will be of use in your search for opportunities to expand your career.

People in your network may be able to give you job leads, offer you advice and information about a particular company or industry, and introduce you to others so that you can expand your network. Remember that you won't have credibility with people until they really know you. In order to gain their trust, you have to prove yourself. One method that I highly recommend to accomplish this goal is to engage in community events. **46149**

## Open-Source Skills Open Doors

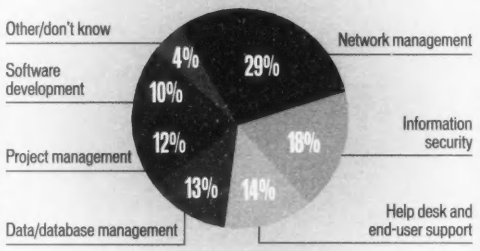
**Within the next year,** 40% of financial services organizations **will strategically deploy Linux, according to Gartner Inc.**

**Already,** 86% of companies across all industries are deploying or testing open-source products, **says OpenEnterpriseTrends.com. In addition, 11% of Fortune 1,000 companies report that more than** 20% of their applications are open-source.

**IBM has stated that it has** more than 150 open-source development projects under way.

## Skills Scan: Today's Specials

**Which specialization would you recommend to someone who's just beginning a career in IT?**




BASE: 1,400 CIOs at companies with more than 100 employees
SOURCE: ROBERT HALF TECHNOLOGY INC., MENLO PARK, CALIF., APRIL 2004

## Numbers Crunch: Outsourcing

| | | | |
|---|---|---|---|
| $83B | Value of 2003 U.S. Department of Defense IT outsourcing contracts | 104,000 | Number of U.S. IT jobs lost as a result of of offshore outsourcing in 2003 |
| $32B | Value of IT outsourcing contracts awarded by civilian government agencies in 2003 | 193,000 | Number of new jobs created in other sectors as a result of productivity gains related to offshore outsourcing |
| $1B | Projected size of the business process outsourcing market in 2006 | 90,000 | Net number of new jobs created as a result of savings from offshore outsourcing in 2003 |

SOURCES: INPUT, RESTON, VA.; IDC, FRAMINGHAM, MASS.; INFORMATION TECHNOLOGY ASSOCIATION OF AMERICA, ARLINGTON, VA.

## EXEC TRACK

### Hall Named Project Leader at SAIC

Spain "Woody" Hall Jr. has been named corporate vice president for project management at the Enterprise and Infrastructure Solutions Group of Science Applications International Corp., a research and engineering company in San Diego. Hall will assist with business strategy and focus on improving integration of client support across business units. He was previously CIO at the U.S. Customs Service and the Department of Energy.

### Rogers Corp. CIO Gets Asia VP Post

Rogers Corp., a manufacturer of high-performance specialty materials in Rogers, Conn., announced that CIO Michael L. Cooper will become vice president for Asia. He will be responsible for manufacturing and staff functions at factories in Suzhou, China, and he will handle coordination with Rogers' joint venture in Japan. Cooper has been CIO at the company since 1999. He previously served as colonel deputy CIO in the U.S. Marine Corps.

### Heller Promoted to CIO at Caterpillar

John S. Heller, currently director of global IT solutions at Caterpillar Inc., has been named CIO. Since joining the Peoria, Ill.-based heavy equipment maker in 1973, Heller has held a variety of IT management positions in Europe and North America.

### McNally to Lead IT At U.S. Foodservice

David McNally has been appointed CIO at U.S. Foodservice Inc., a U.S. subsidiary of Netherlands-based Royal Ahold NV. McNally's appointment came as part of a reorganization at the Columbia, Md.-based company. McNally was previously an information systems principal at Alix Partners LLC in Southfield, Mich.

SUE YOUNG

# How to Make Better Decisions

YOUR SUBORDINATE approaches you with an idea and your immediate reaction is that it's a waste of time and won't work. But a colleague points out that a slight variation of the idea will save weeks of work and make your systems more user-friendly. Why does one person perceive opportunity where another doesn't? How can you keep yourself in a position to take advantage of the opportunities in front of you?

Understand that your perception can become distorted. Whenever your mind is agitated — when you're worried, stressed, overworked, frustrated, angry or otherwise upset — you no longer perceive life directly, but through a glass colored darkly.

SUE YOUNG is CEO of ANDA Consulting in Williston, Vt., where she specializes in data modeling and ensuring successful IT projects. You can reach her at sue@andaconsulting.com.

Instead of taking in information fully and accurately, you put up filters like "Avoid anything that might create more work!" With these filters in place, you can't make cognitive connections that would otherwise be obvious. But if you know that your perceptions can get distorted, you'll also know when to step back and clear your mind before making a decision.

For instance, what do you do when your manager blames you for the network being down, when he was the one who inadvertently disconnected the network interface card while trying to unplug the mouse so the cleaning staff couldn't use the server to check e-mail? Do you explode in anger — or do you laugh? The minor disasters we deal with on a daily basis usually have a comical element. But how often do we have the mental clarity to recognize what's funny in a "crisis"?

So how do you clear your mind, especially if you're overworked and overstressed, as many IT folks are? Here's a short list of reminders to keep at the ready:

**1. Check for humor.** What humor can you find in the situation? I'm not talking about the type of humor that puts people down, but the ability to laugh at the fact that we humans are downright ridiculous creatures. As in "You want it when?!" A good laugh clears the mind and the air so we can look at the situation realistically.

**2. Expect ups and downs.** Too often we get caught in the moment and act as if the current state will last forever. By remembering that everything goes through cycles, from better to worse and down to up, we can find stability amid change.

**3. Turn a problem into an adventure.** We need challenges to grow. Without them, we stagnate and life becomes boring. When the CIO leaves the organization, the CFO puts all new IT projects on hold, and everything's in chaos. It's up to us to bring a sense of adventure and challenge into the mundane and chaotic mess. What can we do with what we've got? How well can we do it? How fast? How creatively? How much fun can we make it? Let's create the finest possible result when we're understaffed, overworked, backlogged and given impossible conditions! If it were easy, it wouldn't be any fun.

**4. Refocus on the organization's goals.** When we're stressed out, we tend to put our own needs first. One of the easiest ways to clear your mind is to do something for someone else: make their job easier, highlight a colleague's success or just hold a meeting outside in the sun for a change. The point is to get your mind off yourself. The act of thinking about what you could do for others — that also furthers your organization's goals — calms your mind and opens you to new possibilities.

**5. Remember that it's a game.** If you were fired today, wouldn't the things at work that seem so important to you now just fade away? You'd be looking for another job, sitting on the beach or doing volunteer work. You'd be playing another game. This job is the game you're playing now. Play it with as much skill, style, enthusiasm and humor as you can. But remember, it's just a game that will evaporate when you leave the company and start to play another game.

All we can do is the best we can do in this moment. By accepting ourselves, our current limitations and the sometimes chaotic nature of IT, we create a degree of peace and mental freedom from which we can perceive opportunities and make better IT decisions. **46198**

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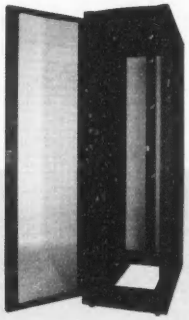

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Seeking qualified applicants for the following positions in Memphis, TN: Senior Business Systems Analyst. Develop major applications systems requirements, testing and controls. Requirements: Bachelor's degree or equivalent* in business, computer science, engineering, mathematics, MIS or related field, plus 5 years of experience in systems planning and design or systems development and integration. Experience with Oracle, PL/SQL and application design and testing also required. *Master's degree in appropriate field will offset 2 years of general experience. Submit resumes to Chris Gibney, Federal Express Corporation, 2003 Corporate Plaza, 3rd Floor, Memphis, TN 38132. EOE M/F/D/V.

**SYSTEM ANALYST**

Full time System Analyst responsible for the network, application and security related activities: Managing Verisign KMS Server for issuing Digital Certificates, designing Netegrity SiteminderPolicy Servers, creating Policies on Appshield/Appscan to protect Web servers, managing Cisco Load balancing switches, managing the access control and data application security, designing and monitoring the hot site, designing EB-XML based messaging network for clients. Must have Bachelor's Degree in Electronics Engineering or Computer Science. Foreign degree equivalent accepted. Must have 2 years of experience in job offered. Send resume to: Business Computer Applications, Inc., Attn. Freddie Johnson, 2180 Satellite Blvd., Ste 325, Duluth, GA 30097.

Business Development Coordinator: Burlington, MA: Perform market research of new IT telecom/networking technologies for analysis by our Japanese parent company. Master's in Info. Systems or a related field. Alternatively employer will accept a Bachelor's in Info. Systems or a related field & 2 yrs' exp. in a related network engineering position. Fluency in Japanese required. Resume to Mr. Shitou, Nissho Electronics (USA) Corp., 3945 Freedom Circle, Ste 240, Santa Clara, CA 95054.

Seeking qualified applicants for the following positions in Collierville, TN: COBOL Programmer Analyst. Formulate/define functional requirements and documentation based on accepted user criteria. Requirements: Bachelor's degree or equivalent* in computer science, MIS, engineering or related field plus 5 years of experience in systems/applications development. Experience with Oracle and UNIX Scripting also required. *Master's degree in appropriate field will offset 2 years of general experience. Submit resumes to Sibi George, FedEx Corporate Services, 1900 Summit Tower Blvd., Suite 1400, Orlando, FL 32810. EOE M/F/D/V.

PROGRAMMER ANALYST. Develop, analyze, design, test & support applications and computer programs. Use Windows NT 4.0, Windows 2000 Server, UNIX-SUN Solaris, PL/SQL, Java 1.1.6, ASP 2.0, HTML, Oracle 7.x and 8.x Servers, Visual Studio 6.0, Developer 2000/6.0 - Forms 4.5, and Oracle Reports 2.5/6.0 to perform duties. BS/MS/or equiv. in CS, Engg., or related fields, plus relevant exp. in above applications. Send resume to A. Singh, HR Manager, STGIL, 11 Penn Plaza, Suite 1001, NY 10001.

**PROG. ANALYST - ORACLE DBA**

Dsgn & dvlp web-based applns handling Oracle dbases in dvlpmnt, qual. assurance & production environments. BS degree in Comp. Sci., Electrical or Electronic Engrng + 3 yrs exp. in job offered or in Software Engrng w/Oracle DBA reqd. Must know Oracle 9iRDBMS on Sun Solaris, SQL & PL/SQL tuning statements, UNIX/Perl Scripts, web-based dbase architecture & dbase support software like Oracle enterprise. High mobility preferred. 40 hrs/wk, OT as reqd, 8 am - 5 pm, $66,730/yr. Qualified applicants please submit resume to: Manager, Butler County CareerLink, Pullman Conference Center, 112 Hollywood Drive, Suite 101, Butler, PA 16001-5699. Please refer to Job Order No. WEB 410203.

Seeking qualified applicants for the following positions in Collierville, TN: Senior Technical Analyst. Research, evaluate, implement and coordinate changes to computer systems/applications. Requirements: Bachelor's degree or equivalent* in computer science, math, MIS, computer information systems, engineering or related field plus 5 years of experience in systems/applications development, including programming. Experience with systems administration using Solaris, HPUX and LINUX also required. *Master's degree in appropriate field will offset 2 years of general experience. Submit resumes to Sibi George, FedEx Corporate Services, 1900 Summit Tower Blvd., Suite 1400, Orlando, FL 32810. EOE M/F/D/V.

SR PROGRAMMER Lead team to design complex operating SW programming applications. BS Comp Sci or equiv + 2 yrs exp as programmer/analyst. VC++ 6.0, telecommunications programming (Dialogic Voice & Vendetta & conference HW & SW APIs) Windows CE & knwldg merchandising service business reqd. Send resume to: CRC, Inc., 562 Lakeland Plaza #249, Cumming, GA 30040.

SQL Server DBA/System Administrator w/exp in production DB's, T-SQL, DTS, MCP, Distributed Transaction Coordinator & Linked Servers. Perform DB backup, restore & create DB. Query optimizations & tuning. Manage & configure applic. like Cold Fusion MX Server, SQL Server, Qmail, SMTP Express, Veritas, LiveStats, IPMONITOR & MRTG. Set up domain network using Active Directory including creating domain users, set up DNS, DHCP, FTP Server & IIS. Configure & install Firewall, Routers & Switches. Mail resume to: Realty Empowered Systems, 6621 Bay Circle, Suite 170, Norcross, GA 30071.

Seeking qualified applicants for the following positions in Memphis, TN: Senior Systems Programmer. Devise procedures to solve complex systems and applications problems. Requirements: Bachelor's degree or equivalent* in computer science, MIS, engineering or related field plus 5 years of experience in systems programming. Experience with UNIX, C and logistics code development also required. *Master's degree in appropriate field will offset 2 years of general experience. Submit resumes to Sibi George, FedEx Corporate Services, 1900 Summit Tower Blvd., Suite 1400, Orlando, FL 32810. EOE M/F/D/V.

Sr. Network Engineer - UNIX sought by network security device manufacturer in Broomfield, CO to work in Broomfield and other unanticipated job sites in the U.S. Installs, configures, maintains and troubleshoots high-availability, fully redundant networks that utilize Sun Solaris Servers, Veritas and Sun Clusters, Veritas Volume Manager, Veritas File system. Work with hardware RAIDS such as A1000 and EMC. Maintain a mission critical production environment at a data center and/or collocation facility on a 24x7 basis. Design and maintain backup solutions with Veritas Netbackup. Install and configure HA agents for the company database. Maintain NIS and NFS servers in a multi-platform R&D environment. Write Perl and shell scripts to automate procedures. Engage in project management as required. Requires 3 yrs exp. installing, configuring, maintaining and troubleshooting high-availability, fully redundant networks utilizing Sun Solaris Servers, Veritas and Sun Clusters, Veritas Volume Manager, Veritas File system and Veritas Netbackup software and hardware RAIDS. Working knowledge in maintaining a production environment at collocation facilities on a 24x7 basis. M-F; 8am-5pm. $110,000/yr. Respond by resume to Employment Programs, PO Box 46547, Denver, CO 80202 and respond to Job Order Number COS0074345.

RESEARCH PROGRAMMER
University of Illinois at Chicago

Administer UNIX, Windows NT and other servers used for teaching; programming; provide instructional technology consulting to faculty; help develop technology-based courses and teach computer seminars and workshops. The applicant should have a Bachelor's Degree in Computer Science or related field, and have teaching experience. The successful candidate should have two years of combined experience in Windows NT, and UNIX system administration, Webmaster experience, programming in HTML, Perl and C, and have experience in teaching, course development and in using computer and Internet technology in education. Working knowledge of Apache, IIS, Tomcat, Oracle, PL/SQL, Transact-SQL and multimedia authoring tools are a plus. Please submit resume by 5/28/04 to Mint Simagrai, Academic Computing and Communications Center, 1940 W. Taylor, Room 124 (M/C 135), Chicago, IL 60612. UIC is an Affirmative Action/Equal Opportunity Employer.

Lead SW Dev Engineer - Lead team to analyze, design, develop, code, document, test, debug, migrate, & implement complex SW applications, databases, reports, &/or make significant enhancements to existing complex systems using Oracle database design/analysis, VB, C++, Java, Web development, SQL, & PL/SQL programming on UNIX & Win NT op systems. I.D. requirements, analyze business problems, & create tech solutions. Apply principles, theories & concepts & use methodologies, tools, documentation processes, & test procedures to complete projects. Responsible for overall success of project including meeting cost, schedule & quality objectives. MS Comp Sci, Eng, MIS, CIS, or related + working/theoretical knowledge of Oracle design/analysis, VB, C++, Java, Web development, SQL, PL/SQL programming, & Unix & Windows NT operating systems. $78,100/yr. M-F 8-5. Denver, CO. Must have proof of legal authority to work permanently in U.S. Application by resume only to CO Dept of Labor, Workforce Development Programs, P.O. Box 46547, Denver, CO 80202. Ref job# COS0749664.

**Software Engineer IV - Web Technology**

(Waltham, MA) Design, develop, and support a secure gateway system for authentication, authorization, and entitlement of all application calls to the backend servers in the telecommunications industry using CORBA and XML Technologies. Design, develop and support highly scalable and reliable common libraries used by all developers. Assist in the designing and developing of n-tier distributed web application for telecommunications using CORBA, XML Technologies, C/C++, JavaScript, HTML and Informix. Review all applications code and processes to improve quality of the applications. Position requires a Bachelor's degree in Computer Engineering or Systems Engineering plus two years of experience in the job offered or two years of experience in the related occupation of Engineer, Consultant or Programmer. Two years of previous experience must include experience with CORBA, XML Technologies, C/C++, JavaScript, HTML and Informix. $73,500/year, plus usual corporate benefits, 9 AM - 5 PM, 40 hrs/wk. Mail two copies of resume to Case #200204210, Division of Career Services, Labor Certification Unit, 19 Staniford Street, 1st Floor, Boston, MA 02114. Must have proof of legal authorization to work in the United States.

Systems Analyst/Web Developer sought to participate in team envmt where ASP & ASP.net s/ware applics are created & maintained on MS IIS Webservers & other dvlpmt tools incl. VBScript/Visual Basic; modify ASP applics incl. new functionality, bug fixes & report dvlpmt; create/modify flow charts & technical specs of web & d/base applics; build & dsgn large-scale relational d/bases in SQL Server incl. table structures, stored procedures, triggers & DTS packages; participate in all phases of s/ware dvlpmt life cycle by gathering & defining reqmts, dsgn, dvlpmt & testing; assist in technical analysis of change requests & perform technical duties such as redesigning d/base structures & ASP code; provide testing support for web based applics dvlpd using VBScript/VB, ASP, ASP.Net & SQL Server. Req Bach in Comp Sci, Info Systems Mgmt or related field + 3 yrs exp w/web applic dvlpmt using ASP, SQL Server, IIS Webserver, VBScript/VB & large -scale relational d/bases, incl. at least 1 yr exp working in .NET envmt. Send resume w/code SD1 to Irene Marchuk, American Institutes for Research, 1000 Thomas Jefferson St, NW, Washington, DC 20007. EOE

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**Software Engineer IV - Web Technology**

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Implementing, upgrading and supporting Oracle Financial Application 10.7NCA/11i or Oracle HR, Payroll, Training and Administration. PL/SQL, SQL*Plus, SQL*Loader, Discoverer 2000, Developer 2000, OAS, Forms (6i), Reports (6i), TOAD, experience on AP, GL, PO, FA, CM, PSB, SYSADMIN & AR Modules. Oracle DBA, Oracle Utilities, Unix Shell Scripting, PL/SQL, Erwin Data Modeling/Designing, Interwoven TeamSite, Installing and upgrading Teamsite, Templating, WorkFlow Management, Content Management System, Open Deployment, MetaTagger, ASP.NET, C#, Visual Studio.NET, XML, XSLT, SQL SERVER2000, Oracle9i, Dreamweaver 4.0 MX, Crystal Reports6.0, Lawson Application 8.X,Unisys 2200,Sun Solaris 2.9, Teradata Datawarehouse,COBOL,JCL,VSAM,CICS ,DB2,MVS,IMS,VSAM,Expeditor, Spufi, File-aid, PMX, EDI Gentran/Mercator, AS/400,ILE-RPG IV, CL/400, SQL/400, MAPICS, Query/400 and DB2/400,Lotus Notes, PeopleSoft HR/Financials, BAAN ERP, BAAN tools, SAP R/3 and ABAP/4, Web Technologies like Java, J2EE, JDBC,OOBC, Websphere, MQ Series, EJB, C/C++, Visual C++(MFC), Embeded Systems, Win32 API, Visual Basic 6.0, ATL COM/DCOM (MTS2.0), CORBA, Tuxedo, Net Webservices, Cold Fusion, CFMX, Datawarehousing Informatica and Datastage, SAS 8, WinRunner 6.0, Silk, Load Runner, Rational Suite, SQA Suite.

DBA's must have experience in installation, migration, moving, setup, monitoring and trouble shooting of various database applications. May require travel to client sites. Software Engineer $78,000 & up; DBA: $60,000 and up. Mail resume to CRG Inc. 1087 Elm Street, Suite# 501, Manchester NH 03101.

Software Engineer: For proprietary trading firm, design & develop trading support applications for various equities & derivatives securities; participate in all phases of software development from initial req's through final quality assurance & implementation; design & develop client components for system; design & implement robust & reusable source code; monitor live trading strategies & work w/ traders & quantitative researchers to develop, back test & implement new strategies. Req's: Bachelor's or equivalent in Comp Sci, Eng or a related field, 5 yrs exp in job offered or 3 yrs software development exp. Exp must include software architecture & project mngmt. Exp in market data, statistical arbitrage & developing real-time trading sys interfaces, including ITCH, OUCH, FIX & CTCI. Prof in C++, MFC, COM, DCOM, Windows NT/2000/XP, UNIX, C#.NET, VB.NET, PL/SQL, ODBC, TCP/IP, ADO, OLEDB, Socket & RPC programming. Knowledge of Connectivity to Exchanges, Equity/Derivatives Trading & Middle Office/Back Office. 40hrs /wk. Send res. to box D-10, P.O. Box 17182, Phila., PA 19105.

DATABASE ENGINEER - Aid w/ design and dvpmt. of databases for media telecomm. prods. Req'd: Masters in Mgmt. Info. Sys. Or CS, Fluency in Turkish. Resumes: Mezun.com Inc. 3500 Boston Street, Baltimore, MD 21224. Attn: L. Heron, Jr.

Data Acquisition Developer Sr. - Large bank holding company, headquartered in Tennessee seeks experienced data acquisition developer. Primary responsibility is ensuring the currency, quality, and integrity of the data loaded from sourced systems into the data warehouse. The implementation of business rules associated with the publication of business intelligence data in the data warehouse is a primary focus of this position. The Data Acquisition Developer will enhance, modify and/or change data published in the data warehouse (DW) from front-end system providing consistency and synchronization across all platforms. Should have experience using AbInitio or other equivalent ETL tools in a UNIX environment. Experience in integrating metadata repositories into the ETL process.

Must demonstrate expertise in UNIX scripting and automated load scheduling to meet data warehouse service level agreements. Experience in the AbInitio Co-Operating Environment, AbInitio Re-Source Control, AbInitio Data Profiling, DQ Component Development and working knowledge of Enterprise Metadata Environment. Should have working knowledge of Teradata Utilities like BTEQ, MLOAD, FASTLOAD, etc.

Minimum educational requirements include the following: Bachelor's degree in Computer Science or equivalent education and exp. 5+ years in systems development, databases, or other related areas. Solid knowledge with line of business (LOB) legacy systems. Proficiency with data cleansing and extraction tools. Strong knowledge and understanding of one or more database management systems. Strong Analytical and problem solving skills. Excellent project management skills in the areas of planning and monitoring projects. Rewards commensurate with experience and at least equal to the minimum prevailing wage for a 40-hour week. Standard benefits package available. Only persons with authorization to work in the U.S. need to apply. EEO. Submit resume and three references to:

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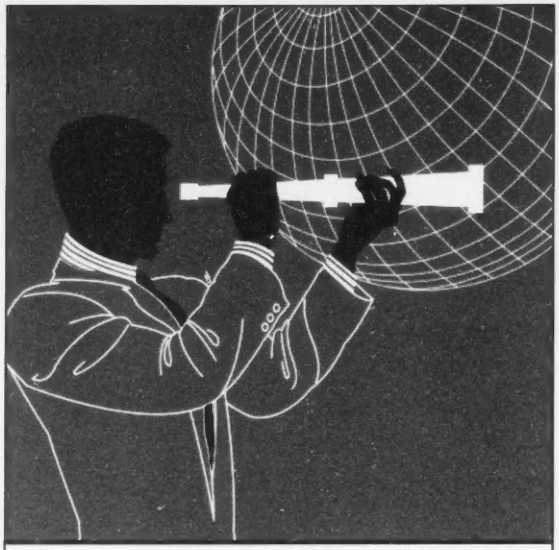
Senior Database Administrator - Maintain multiple Oracle Applications environments. Accept and approve database design, participate and agree on Oracle Applications database acquisitions, perform or check sizing results, acquire requisite system software and system/storage devices, perform data change control, install upgrading database software, implement production, test and staging databases. Maintain dictionary or repository. Assist operations staff in setup of required operations environment for running the system. Assist in provision of agreed service levels to the user/business, monitor the system (derive statistics for usage, performance, problems, utilization, etc). Ensure integrity of data in database per defined database constraints and help maintain and define constraints with active participation from development groups. Implement disaster recovery and report architecture procedures and solutions. Administer and implement security integrity controls. Maintain, follow and adhere to policies, procedures and standards relating to database management. Requirements include a Master's degree or equivalent in Computer Science, an Engineering discipline or closely related field and six years of work experience in the job offered or related field of database administration within an Oracle Applications environment. Applicants must have unrestricted authorization to work in the United States. Salary $105,000/year. 40 hours/wk. Respond with two copies of resume to Case #200204237, Labor Exchange Office, 19 Staniford St., 1st Fl., Boston, MA 02114.

Programmer Analyst needed to analyze, dsgn & dvlp computer applics & infrastructures using Borland C++, STL, TCP/IP, ACE (Adaptive Communication Framework) & MS SQL Server to support & enhance quantitative research & operations for commodity trading advisor firm. Lead projects using algorithm-based frameworks for proprietary computer s/ware applics, knowl. of FIX Protocol & knowl of futures/equities mkts. Form reqmt specs to dvlp prgms using structured object oriented analysis & dsgn. Dsgn & code project specs into reusable coding libraries. Perform standardized B&W box (incl. regression) testing. Analyze & enhance prgms to increase performance & adapt to new product reqmts. Must have Bach/equiv in Comp Engg or Comp Sci & 2 yrs exp in job. Send resume in dupl to H. Lie, 1700 Broadway, 39th Fl, NY, NY 10019.

Web Developer to develop, modify and implement web-based information systems to ensure secure access to sensitive information by end users. Develops queries, stored procedures for manipulation and integration of large datasets. Develops scripts/programs to convert data into a format to be easily loaded into database. Develops real time on-line management reports for internal and external users. Uses ASP, IIS 4.0, HTML, XML, COM, ADO, JavaScript, VBScript, Visual Basic, SQL Plus or SQL Query Analyzer, Windows Scripting Host in Windows NT Operating System in performance of duties. Requires Bachelor's Degree in Computer Science, Information Systems, or Information Decision Science. Also requires one year direct experience in the job offered position. Send resumes only, no calls to: Craig Odegaard, Director of Information Technology, PayNet, Inc., 5750 Old Orchard Road, Ste 510, Skokie, IL 60077.

Technology-consulting firm in WI has mult. IT pos around country w/exp in 1 or more (depending on need) of follwg skills: WebMethods Integration Server, WebMethods Trading Networks, WebMethods Enterprise Server, IBM MQSeries, IBM Assembler, IBM WebSphere, Mainframes, CICS, DB2, COBOL, Unix, Sun Solaris, Win, C/C++, Visual C++, VB, Power Builder, Dsgnr 2000, Dvlpr 2000, Oracle, Oracle Applic, SQL Server, MS Access, SQL, SQL Plus, PL/SQL, Data warehousing Tools, HTML, DHTML, XML, TCP/IP, Perl, JSP, Weblogic, Java, Java Script, VB Script, ASP, Clarify, Documentum, CoreDossierX, Rational Rose, Testing tools & QA methodologies. Rel edu & exp reqd. Relocation may be req. for most jobs. Resume: Exec Search, Inc., C/O ISS, 1300 Bent Creek Blvd, Ste. 200, Mechanicsburg, PA 17050.



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Systems Application Engineer: Will define product features, detailing product requirements for company's SONET/SDH Framer and Mappers. Will interact with strategic customers and other industry leasers on systems architectures and protocols and define the current and next generation of products. Responsible for digital hardware design and architecture of digital systems. Requires: Bachelor of Science degree in Electrical/Computer Engineering or equivalent. Must have knowledge of SONET/SDH and Viewlogic. Demonstrated ability to test, debug and characterization of test platforms and ASICs with SONET/SDH instrumentation. 40hrs/wk (9:00 a.m. to 5:00 p.m.) $80,000.00/yr. Send two resumes/responses to: Case Number 200204211, Labor Exchange Office, 19 Staniford Street, 1st Floor, Boston, MA 02114

SOFTWARE ENGINEER to design, develop, test, enhance and maintain web-based and client/server application software for the insurance industry using C, C++, Java, Java Script, Oracle, JDBC, J2EE, JSP, Servlets, EJB, TCP/IP and UML under Windows 95/98/200/NT/XP, DOS and UNIX operating systems. Requires: M.S. Degree in Computer/Information Science, an Engineering discipline, or a closely related field with two years of experience in the job offered; Experience gained before or after earning the M.S. degree will be accepted; Competitive salary offered. Send resume to: Infinity Insurance Company, P.O. Box 444, Birmingham, AL 35209; Fax at 205-803-8406; or E-mail at: Jobs@Infinity-Insurance.com; Attn: Job CM.

International Build/Release Engineer wanted to design, implement & maintain product installers, incl. InstallShield installers for French, Italian, German, Spanish & Dutch products for Dragon Naturally Speaking; resp. for automated builds of all released products, incl. maintaining, forking & archiving source code repositories; creating master discs; implementing automatic build features; & performing test-automation. Must have Bach. deg. in Comp. Sci., Eng. or related field & 2 yrs. exper. with product installation, incl. at least 1 yr. exper. with InstallShield, & knowledge of object oriented programming languages such as C++, Java or Python. Salary $65,000/yr. Send 2 resumes to Case #200204238, Division of Career Services, Labor Certification Unit, 19 Staniford St., 1st fl., Boston, MA 02114.

Integrated Software Solutions, Inc., a rapidly growing IT consulting Co has permanent positions open for Computer Software Professionals w/BS or equiv deg & exp in one of the following skills or in a combination thereof:

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ISS, Inc., provides a competitive salary & benefits. Applicants must be willing to relocate/travel to various unanticipated locs throughout US. Send resume to: HR Dept., ISS, Inc., 855 E. Golf Rd., #2145, Arlington Heights, IL 60005 OR email to resumes@issinc-usa.com.

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IT professionals (programmers/system analysts, software engineers) wanted by Advanced Technology Group to design applications using Java, Oracle, SQL, HTML, WebLogic, JSP, VB, EJB, etc. Min. requirement is BS/MS with exp. Please send resume to info@atgusainc.com. EOE

Morrisett Associates is a small professional web/software design company. It has openings for Web Developers, IT Professionals for Web development using ASP (VBScript and JavaScript). Must have BS/MS with exp uing ASP, ASP.Net, VB.Net. Contact morrisett@midwestcyber.com. EOE

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Hexium, Inc. is a new IT company. It has openings for software engineers, web developers, system analysts. Qualified candidates must have BS with substantial experience in ASP.Net, SQL. Travel may be required. Please apply at humanresources@hexiuminc.com. EOE. No calls.

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Computer Programmer II needed in Orem, Utah to enhance, integrate and develop new projects. Will provide expert level delivery of custom applications utilizing various technologies and methods (i.e. Java, Delphi, PHP, JavaScript, C, XML/XSL and UNIX/LINUX shell scripting). B.S. in Computer Science or related field required. Also requires: 1. Specialized knowledge in object-oriented programming in PHP, Delphi and JAVA and database experience in MySQL, Advantage Database Systems and SQL-SERVER. 2. Demonstrable ability to perform extensive web database design and programming; 3. Requires travel nationally and internationally. 4. U.S. employment authorization. For full listing of job duties, requirements and application procedure go to JobADSUSA.com job order 230774 or call (801) 379-4011.

Developer/Support/Quantitative Analyst sought by Knight Trading Group for Santa Clara, CA office. Candidate must possess Master's degree in Computer Science or directly related field and 18 months experience in software development, design and analysis. Must have experience in developing large high-performance and highly scalable software systems and skills and experience in C, C++, JAVA, JSP, J2EE, Perl, SQL, ORACLE database, UNIX, Windows. Respond to: Human Resources Dept. 891-TJXLL, 525 Washington Blvd., Jersey City, NJ 07310.

Information Systems Analyst wanted by Real Estate Brokerage in IL to coord activities in such fields as electronic data processing, info systms, systms analysis & comp prgmg. Must have Bach or its equiv in Info Systms/Comp Sci & 1 yr exp in job offd or related position in Systms Analysis/Prgmg. Respond to Mr. P. Brown, Oxford Falconridge & Pensby Realty, Inc., 40 Du Page Ct., Ste 410, Elgin, IL 60120. No calls.

Sr. Software Consultant sought by s/ware dvlpmt co. for Kansas City, KS office to dsgn & dvlp custom based web, d/base & desktop applics. Dvlp thru full s/ware dvlpmt lifecycle for assuring timeliness, cost-effectiveness & overall qlty of deliverables. Bach in Comp Sci, Engg or related field + 4 yrs prof'l exp & 6 mos exp w/VB, ASP, SQL Server, ORCAD/PCAD/PADS2000 & Oracle. Send resume to: FNSTAR, Inc, 12009 Horton #66, Overland Park, KS 66209; email: jobs@fnstar.com.

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Computer Programmer. Job location: Buffalo, NY. Duties: Design, develop & maintain intranet websites using ASP, Coldfusion, SQL SQL Server and/or MS Access. Develop appls. using Visual Basic & create or modify reports based on user needs in Crystal Reports. Move intranet websites from develop. to prod. Interface w/database admin., web users & IS helpdesk to solve system problems. Requires: B.S. (or foreign equiv.) in Comp. Sci., Eng. or a related field & 2 yrs. exp. in the job offered or 2 yrs. exp. as a Prog./Analyst or Prog. Concurrent exp. must incl. 2 yrs. exp. developing appls. using Visual Basic & 6 mths. exp. using ASP. Mail resume (no calls) to: Shannon O'Brien, CTG, Inc., 700 Delaware Ave., Buffalo, NY 14209-2094.

COMPUTER/IT
Software Engineer. Requires a Bachelor's degree (or equivalent) in Information & Decision Systems or a related field. Must have 3 years of experience in the job offered or 3 years of experience developing commercial customer care & billing applications for the pay media market. Stated experience must also include 2 years of experience developing, designing and debugging core components of IBS. n-tier customer care and billing applications. 40 hrs/wk. Send resume to L. Tyler, Entriq Inc., 1900 Wright Place, Carlsbad, CA 92008.

PROGRAMMER/ANALYST to analyze, design, develop, test and implement application software using C, Visual Basic, ASP, Perl, SQL, HTML, OOP and SQL Server on UNIX and Windows platforms. Require: B.S. degree (or completion of all coursework) in Computer Science, Mathematics, or a closely related field with two years of experience in the job offered or as a Programmer. Competitive salary offered. Apply by resume to: Frank Beaman, Global Software Development Services, Inc.,10 South Fifth St., Suite 700, Minneapolis, MN 55402; Attn: Job SB.

Computer Support Specialist. Job location: Rochester, NY. Duties: Provide tech. assist. on oper. of AS400 oper. system. Resolve computer problems for clients in person, over the web or via telephone & provide assist. concerning the use of computer hardware & software. Identify user problems, answer system messages & help desk calls for end users & provide problem solving services. Requires: B.S. in Comp. Sci., Eng. or a related field. Coursework must incl. classes in: Visual Programming, Data Comm. & Computer Networks & Network Admin. Mail resume (no calls) to: Angela Koehler, CTG, Inc., 30 N. Union St., Ste. 201, Rochester, NY 14607-1345.

Software engineer to design, develop and test computer programs for business applications; analyze software requirements to determine feasibility of design; direct software system testing procedures using expertise in ASP.NET, ADO, IIS, SQL, Empirix, LoadRunner and WinRunner. Requirements: Bachelor's Degree, educational or functional (3 years experience=1 year college) equivalent, in Computer Science or related field and one year experience as a software engineer or computer programmer, knowledge of ASP.NET, ADO, IIS, SQL, Empirix, LoadRunner and WinRunner. Salary: $70,242/year. Working Conditions: 8:00 A.M. to 5:00 P.M., 40 hours/week, involves extensive travel and frequent relocation. Apply: Site Administrator, Greene County Career Link, 4 West High Street, Waynesburg, PA 15370, Job No. WEB410236.

GCP, Inc.: IT firm seeks Multi SW Eng'rs. positions for the following projects:

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Must include on resume the job ref # that you are applying. Applicants must have a MS in CS, Eng'g or Applied Sci. rel. plus 2 yrs. exp. sys analysis/prog'g rel. exp. Will consider BS & 5 yrs exp as equiv. FT. Jobsite: Cranston, RI, may change to other job sites throughout US as req. Send resume to GCP, 4451 Brookfield Corporate Drive, Suite 117, Chantilly, VA 20151. Legal right to work in the US must be stated.

Computer Professional (Multiple Openings) W/exp in one or more of the following:
C/C++, JAVA, Power Builder, Visual Basic, Oracle, Developer 2000, Sybase, Windows, Unix Admin, People Soft, SQL Server, SAP, Oracle Financials, Cobol, Db2, Cics, MVS, JCL, AS/400 Lucrative compensation. Please E-mail your Resumes to the following address:
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IT Professionals needed for IT development and consulting firm headquartered in the Atlanta region but with offices and projects for clients located throughout the U.S. Multiple positions open. The positions open are for client server and web-based developers. Some of the skill sets needed immediately include:

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All positions require a B.S. degree in either computer science, math, engineering, or business. Competitive salary is offered. Experience required varies from 1-5 yrs. exp. in skills identified above. If interested, please send resume to: adjobs@mdicareers.com

Software engineer to design, develop and test computer programs for business applications; analyze software requirements to determine feasibility of design; direct software system testing procedures using expertise in J2EE, EJB, JAXP, JMX, Oracle and Servlets. Requirements: Bachelor's Degree or equivalent in Computer Science or related field and two years experience as a software engineer or computer programmer, knowledge of J2EE, EJB, JAXP, JMX, Oracle and Servlets. Salary: $70,242/year. Working Conditions: 8:00 A.M. to 5:00 P.M., 40 hours/week, involves extensive travel and frequent relocation. Apply: BECS/CareerLink Program Supervisor, Indiana County Career Link, 300 Indian Springs Road, Indiana, PA 15701, Job No. WEB410242.

Programmer Analyst - Java: Wanted by an IT consulting firm in Keene, NH to work at various client locations throughout USA. Respond to HRD, Infowave Systems, 39 Central Square, Suite #201A, Keene, NH -03431. Requires: Bachelor Degree in Computer Science or related field and one year experience. In the alternative will accept applicants with three years of university level education plus three years of experience performing analysis, development and testing of enterprise web applications. Primary experience must incl working with technologies such as J2EE, XML suite, BPMS, Shell scripts, RDBMS Design, Development and Tuning, Middleware on UNIX.

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Software engineer to design, develop and test computer programs for business applications; analyze software requirements to determine feasibility of design; direct software system testing procedures using expertise in .NET, EJB, SQL Server, C# and XML. Requirements: Bachelor's Degree or equivalent in Computer Science or related field and two years experience as a software engineer or computer programmer, knowledge of .NET, EJB, SQL Server, C# and XML. Salary: $70,242/year. Working Conditions: 8:00 A.M. to 5:00 P.M., 40 hours/week, involves extensive travel and frequent relocation. Apply: Fayette County CareerLink, Attn: Career Link Program Supervisor, 135 Waylan Smith Drive, Uniontown, PA 15401, Job No. WEB410227.

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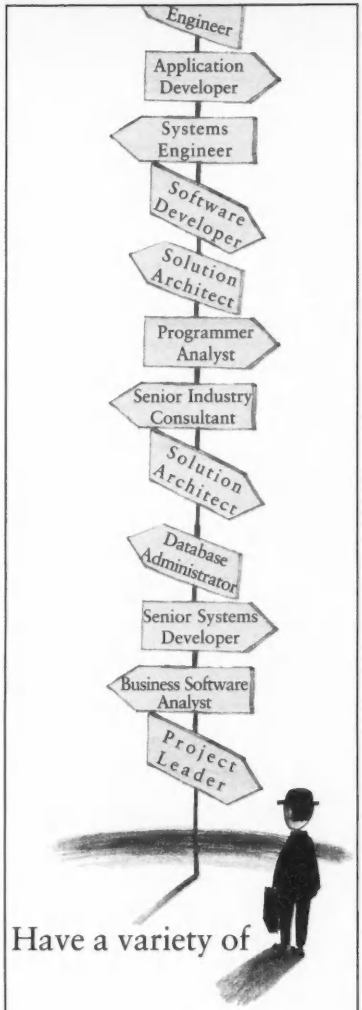


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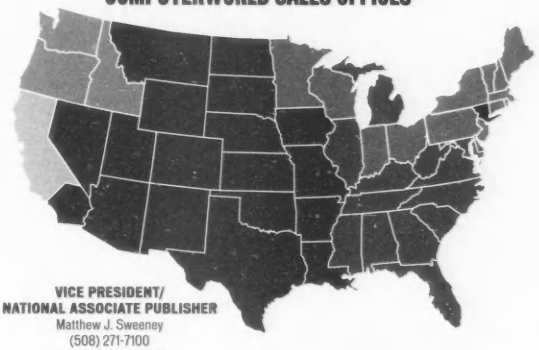

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## Sun's Plan

having given up the title of president to former software division head Jonathan Schwartz in a management reshuffle earlier this month, McNealy made it clear that he's in charge and that he and Schwartz are "joined at the hip."

McNealy compared his leadership style to the aggressive, top-down approach of a military leader, pointing to former U.S. Army Gen. Norman Schwarzkopf, commander of Operation Desert Storm, as the type of leader he admires. It's an apt comparison: McNealy is under the gun to improve profitability after Sun posted a net loss of $760 million for its most recent quarter and cut 3,300 employees.

"You are going to see a lot of changes here," McNealy promised his business partners, whose fortunes are closely tied to Sun's. McNealy said that he's focused on improving profitability and that the credibility of his vision, at least on Wall Street, will rise only if the bottom line rises — despite the fact that Sun has $7.5 billion in cash.

"The opportunity exists; the execution will determine the outcome," said Anna McDermott, president and CEO of GE Access, a General Electric Co. subsidiary that serves as a value-added distributor for about 800 Sun resellers.

### Technology on Track

Talisen Technologies, which makes secure remote-access software, also sees an opportunity. Two months ago, the St. Louis-based company become a Sun partner and is integrating its product into the Java Enterprise System, a software stack that includes Sun's directory, application and portal servers.

"We think the technology is first-rate," said Jeff Brandt, Talisen's director of business development for the aerospace sector. "The question is, how do you get the message out?"

McNealy said Sun isn't changing its core technology direction; for instance, it isn't backing away from its UltraSparc processors. In fact, McNealy said he sees chip throughput improvements as essential to enterprise customers for emerging tasks such as processing radio frequency identification data from thousands of connected systems.

And Sun has no plans to make a fundamental shift to Linux. It will offer Linux in its desktop systems and on some servers, but it intends to stick with Solaris for mission-critical systems.

JONATHAN SCHWARTZ may be Sun's president, but Scott McNealy made it clear that he's still in charge, saying he and Schwartz are "joined at the hip."

Solaris is what Jim Knudsen, technical director of Digital Technology International, a developer of newspaper publishing systems in Springville, Utah, recommends to his customers. If something goes wrong with a client's Linux system, "I don't even have a throat to choke, except my own," he said.

McNealy acknowledged the need to build a stronger relationship with his channel by avoiding competition between the resellers and his sales force and by better utilizing the resellers' industry expertise to deliver systems that solve users' problems.

Sun was once "totally product-focused," and services were "an afterthought," said Larry Baker, senior director of Sun's global partner strategy.

McNealy also addressed the importance of dramatically increasing Sun's recurring revenue, which now accounts for about one-third of the more than $8 billion in revenue Sun reported for the first nine months of its fiscal year. And software is critical to that effort, he said.

"We are not selling the component," said McNealy. "What we are doing is providing a Web services infrastructure."

Mardi Norman, president of Dynamic Systems Inc., a Los Angeles-based reseller of Sun servers to the public sector, is confident that McNealy will win the battle. "If I didn't have a strong belief in the future of Sun," she said, "I would have to change the direction of my company." **46416**

*Continued from page 1*

## Internet Flaws

to cause vulnerable systems to repeatedly restart when processing specific SNMP requests, eventually leading to DoS conditions, Cisco said.

The flaw is particularly dangerous because it affects a wide range of Cisco's routers and switches and is very easy to exploit, said Amit Yoran, director of the U.S. Department of Homeland Security's National Cyber Security Division.

"A freshman programmer can attack this vulnerability and crash a router," he said.

"There's very little by way of resources that is needed to mount an attack," added Shawn Hernan, a member of the technical staff at the U.S. Computer Emergency Readiness Team (US-CERT).

"An ordinary desktop is more than sufficient" to take advantage of the flaw, he said. Even companies that otherwise follow security best practices are unlikely to be protected against the flaw without the appropriate patches or work-arounds, Hernan said.

But some users appeared to be less concerned.

"I don't think it's a very big deal," said Jim Kirby, senior network engineer at Wells' Dairy Inc. in Le Mars, Iowa. After reviewing its networks, the company decided to hold off on any updates and work-arounds until the next scheduled maintenance period, he said. Wells' already uses strong access control lists to block traffic to SNMP ports and has tools to monitor for network abnormalities, Kirby added.

"Another day, another vulnerability," said Hugh McArthur, information security officer at Online Resources Corp., an online bill-processing company in McLean, Va.

By Thursday, Online Resources had reviewed, tested and begun deploying Cisco's updates. However, its risks are minimal because the company's use of SNMP is minimal, according to McArthur.

### TCP Flaw

Meanwhile, a US-CERT advisory last week warned of a critical flaw in the Internet's core Transmission Control Protocol. The flaw allows remote attackers to create DoS conditions against TCP connections, with sustained attacks capable of disrupting portions of the Internet, the advisory stated.

The flaw was disclosed by the U.K.'s National Infrastructure Security Co-ordination Centre and involved a long-known weakness in TCP that allows attackers to constantly reset routers by guessing a unique 32-bit number needed for the process.

Particularly vulnerable to the TCP flaw are the Internet's vital Border Gateway Protocol routers, which share traffic-routing information.

The flaw is serious because it affects virtually every product that uses TCP, experts said. But exploiting it continues to be a challenge, said Paul Mockapetris, inventor of the Internet's core Domain Name System and chairman of IP address management vendor Nominum Inc. in Redwood City, Calif.

"It's not a superbig deal, because you pretty much have to reveal yourself" when launching such an attack, he said.

Internet Security Systems Inc. was able to crash a router in 15 seconds by exploiting the TCP flaw, said Chris Rouland, director of the X-Force security team at Atlanta-based ISS. But even that is very long in network time. "It's very noisy and very easy to detect," he added. **46415**

### Flaw Fallout

**Cisco's vulnerabilities in SNMP message processing**

- Affect IOS Versions 12.0S, 12.1E, 12.2, 12.2S, 12.3, 12.3B and 12.3T.
- Could cause affected devices to reboot when exploited. Repeated attacks could cause DoS conditions.
- Can be fixed by available patches and work-arounds.

**Vulnerabilities in TCP**

- Affect implementations that comply with the Internet Engineering Task Force's specs.
- Could allow attackers to create DoS conditions against TCP connections.
- Can be fixed using available vendor patches.

### MORE INSIDE

Turn to **page 46** for Frank Hayes' suggestion for addressing the TCP flaw.

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FRANK HAYES ■ FRANKLY SPEAKING

# Money Problem

ANOTHER WEEK, another couple of security holes — and this time they're not from Microsoft. Instead of affecting an application or operating system, these problems threaten the entire Internet (see story, page 1). The easy one to fix is in Cisco routers and switches; Cisco has a patch that blocks the problem. Good thing, too, because that one poses the more immediate threat.

The other vulnerability is with the Transmission Control Protocol — the TCP in TCP/IP. TCP is used everywhere on the Internet. And the best way to solve *that* problem may be to throw money at it.

Put simply, the TCP vulnerability makes it possible for an attacker to shut down a TCP session after guessing a random number. It could be used to shut down communication between two routers on an Internet backbone. That, in turn, could knock out whole chunks of the Internet until the routers recover and rebuild their routing tables. Enough of these attacks at once could wreak havoc.

That's the threat. And it's been known for nearly 20 years. But the risk seemed minimal — how likely was it that an attacker could successfully guess a random number between zero and 4,294,967,295, anyway?

But over the years, researchers discovered that the random number isn't all that random. And that many routers can be shut down without guessing the exact number — just hitting *around* the right number will do it. And that faster networks let an attacker make more guesses: If attackers use hundreds or thousands of zombie PCs for the attack, the guesses can come orders of magnitude faster.

Today, that number-guessing attack is still no simple slam-dunk. But now it's actually conceivable. And it's getting easier every day.

And the fixes? There are several — with names like IPsec, RFC 1948 and RFC 2385 — and they've been around for years too. Some use encryption. Others make the numbers harder to guess.

But they all require trade-offs. With some, security improves but performance suffers. Or reliability drops. Or reliability can be restored, but *that* causes a performance hit.

Which do we choose — security, reliability or performance?

That's easy. Anytime you can convert another class of problem into a hardware performance problem, you can solve it. Other kinds of problems are technical — and usually hard to fix. Performance problems just cost money.

Improving hardware performance is cheap. Thanks to Moore's Law, it gets cheaper every year. And it's one of the few things in IT that can be reliably priced. So you can figure out *exactly* what the cost is to solve a performance problem by buying faster hardware.

Will you pay that price? Maybe not. But it's not a technical issue. Any problem you can transform into a hardware problem is one that *can* be solved — by throwing money at it.

Back to the TCP flaw: We all bemoan security problems on the Internet. We now have a looming threat in the form of this number-guessing attack. The Internet backbone is largely at risk because the routers running it don't have the computing power to run encryption-based protocols like IPsec, which could block not only number-guessing attacks but many other threats as well.

What would it take to develop a more efficient, new TCP security protocol that doesn't cause IPsec's performance hit? We don't know. We don't even know if it's possible.

But what would it take to roll in faster hardware for all of the Internet's backbone routers? Just money. Lots of money, it's true, and we'd be paying the tab in the form of higher Internet bills. But for once, we can actually calculate the price of a secure Internet infrastructure.

Will we pay that price? Maybe. But if we won't throw money at this problem, we've really got no one else to blame when some number-guessing attacker finally brings down the Internet. 46384

FRANK HAYES, *Computerworld*'s senior news columnist, has covered IT for more than 20 years. Contact him at frank_hayes@computerworld.com.

## SHARK TANK

### Honesty Is the Best Policy

It's the 1970s, and a pilot fish writes a program to calculate production schedules based on parameters from this operations bigwig. But every month, fish has to run the program several times, tweaking the parameters until the bigwig gets the results he wants. Fish's solution: He writes another program that takes the numbers desired and cranks out the right parameters for that result; he figures that will save time all around. But the bigwig nixes that plan. His reason: "It just wouldn't be honest."

### Job: Security

New CIO arrives and promptly starts laying off people in the data center. "On Black Monday, colleagues I'd worked with for years got a phone call and 10 minutes later were shown to the door," says a pilot fish there. But one 25-year vet survives when the boss shows his hit list to an IT manager. "You might want to reconsider this one," manager says. "He's the chief security system administrator. If you fire him, there will be no one to suspend the IDs of the other workers."

### Playing the Game

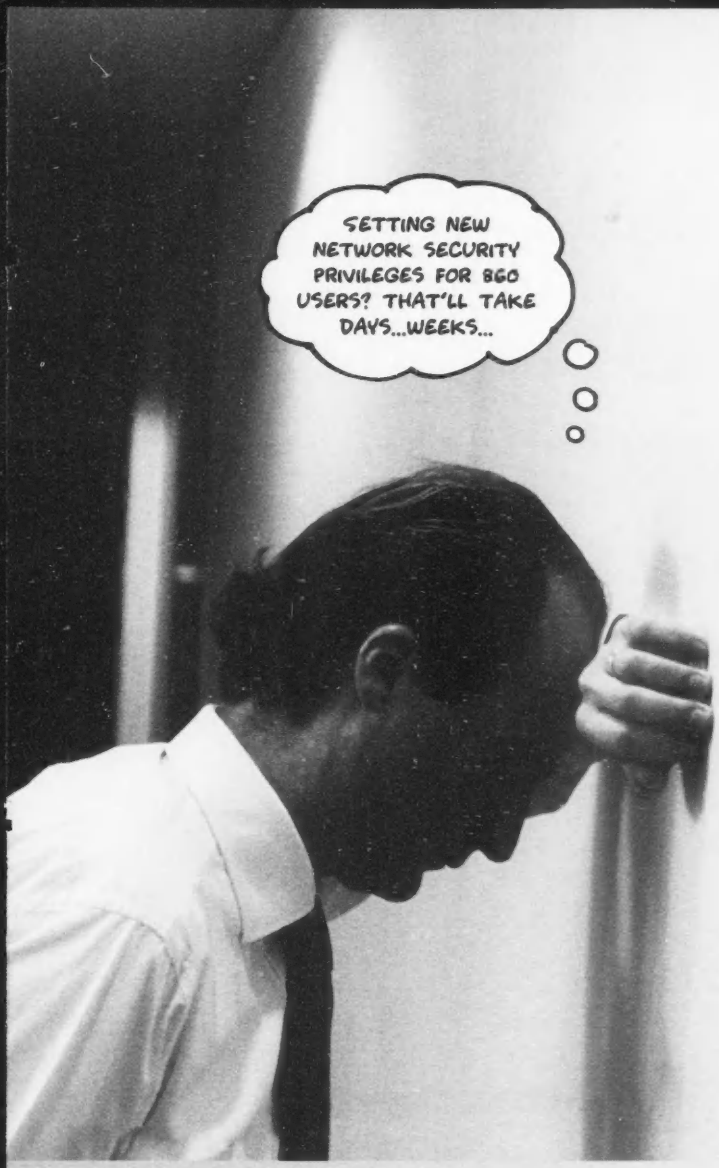
After paying $10 a day for broadband access at this hotel, pilot fish discovers there's no cable – it costs an extra $5 a day. "So I did what any good IT person would: I scrounged around for one," fish says. "I noticed that the TV in the room also had a video game console and some other features. One of the little boxes in the back was attached via a 1-foot piece of Cat 5 cable. Bingo! Instant access, thanks to the 'generous' hotel amenities."

### Another Fine Mess

Pilot fish figures it's safe to store these four pumpkins under the mainframe room's raised floor for a month before Halloween. Come late October, he retrieves them, but only three are left; the fourth is a reeking orange puddle. "To my surprise, one of my operators cheerfully said, 'I'll clean that up,' " says fish. "His previous job was at McDonald's, and this little cow pie was nothing compared to things at that job. He was the only operator in our shop to ever get perfect scores on his midyear evaluation."

**FIVE YEARS.** Hard to believe it's that long since Sharky started telling your true tales of IT life, huh? Not bad for an IT lifer with a little water-cooler time on his hands. Sharky wants to thank all his friends who made it possible: Steve, Frank, Sami, Mitch, Tom, Brian and especially all you heroic pilot fish who will remain nameless – so you can keep your jobs. Your secrets are safe with me, kids.

Want to join their ranks and score a stylish Shark shirt? Then come on, just send me your tale: **sharky@computerworld.com**. And check out the daily feed, browse the Sharkives and sign up for Shark Tank home delivery at **computerworld.com/sharky**.

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